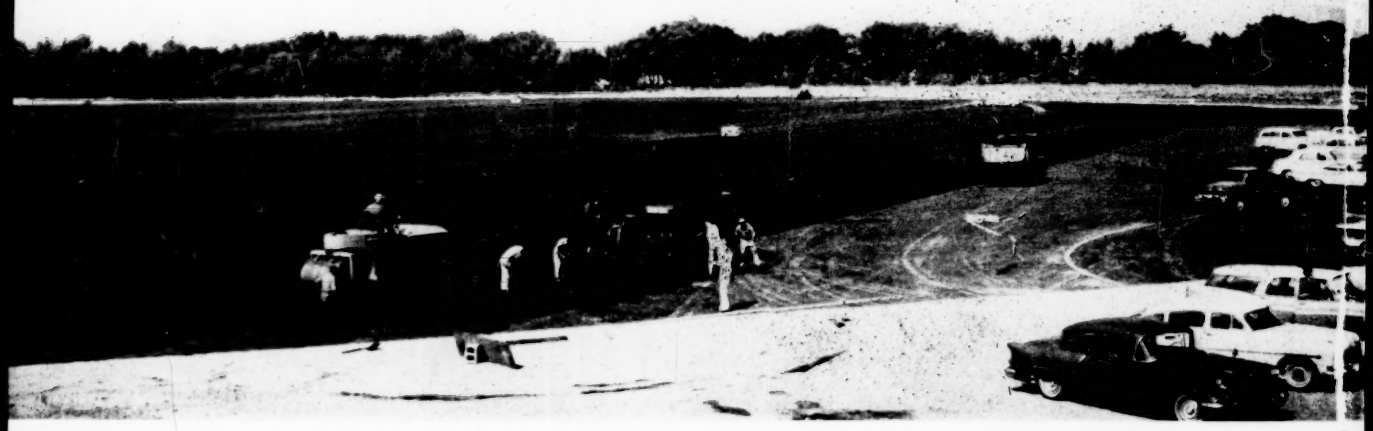
JANUARY 1960

The American City

"King Kamehameha" greets visitors to the 50th state as they arrive in Honolulu. This city is the most advanced example of metropolitan government in the nation. It has no political subdivisions, embraces the entire island of Oahu. The story of Honolulu and other urban areas on the Hawaiian Islands appears on page 121.

Contractors
ROY M. WRIGHT
ASPHALT PAVEMENT CORP.
ELM OIL & ASPHALT COMPANY
All of Springfield, Mass.

Laying one of the two courses of hot-mix Texaco Asphaltic Concrete on the gravel foundation.



Parking Area has more paving than a 10-mile highway

Paving a parking area has become a major project. The 3,400-car parking area of Springfield Plaza shopping center in Springfield, Mass., for example, required 150,000 square yards of plant-mixed Texaco Asphaltic Concrete pavement. This is more paving than it takes for 10 miles of 24-foot highway.

Texaco Asphaltic Concrete provides a rugged, resilient, yet economical, surface for parking areas. In Springfield, the asphalt pavement was laid in two courses having a combined, compacted thickness of 2¼ inches. The foundation in this case was gravel.

For municipal parking areas, as well as for city streets and airports, Texaco Asphalt products offer city officials a variety of answers to the paving problem. Included are heavy-duty, intermediate and low-cost types of construction. Helpful information on all of these types is supplied in two free Texaco brochures, information which will assist you in choosing the type best suited to your city's paving requirements. Write our nearest office for copies of these brochures. No obligation.

TEXACO INC., Asphalt Sales Div., 135 E. 42nd Street, New York 17
Boston 16, Chicago 4, Denver 1, Houston 1, Jacksonville 1, Minneapolis 3, Philadelphia 2, Richmond 11

TEXACO
REG. T. M.

TEXACO ASPHALT

The American City

JANUARY 1960

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The Cover Photo

Honolulu, of all cities in the nation, has the best opportunity to greet its visitors in a colorful, hospitable way, since they must arrive in groups, either by plane or ship. The picture shows "King Kamehameha" greeting a recent arrival by air. This is part of the welcome by the Hawaiian Visitors' Bureau, an organization whose funds are contributed half by state appropriation and half by local commercial enterprises. The story about urban areas in the 50th state begins on p. 121.

TEACHING BY TV

Bell System facilities meet a new need. Already a vital link in filling educators' requirements within a locality, state or across the nation

HELPING TO TEACH . . . HELPING TO LEARN. Classroom scene in Cortland, N. Y. This is one of the schools now using Educational TV. More than one TV receiver can be used where teachers wish to accommodate larger classes at one sitting.

An interesting current development in education is the use of television for instruction—both in classrooms and in the home.

Evidence that a shortage of qualified teachers is developing coincides with the need for some way to meet the awakened interest in mathematics, physics, chemistry, and education in general—from the elementary school to the college level.

Many educators, in studying the twin problem, are thinking more and more about the possibilities of Educational TV in their teaching programs.

In transmitting TV lessons and lectures from place to place, various means are available. Closed circuit Educational TV systems between schools may be required. Or connection between broadcasting stations in different cities. Or a hook-up between closed circuit systems and one or more broadcasting stations.

Whatever distribution of TV is needed, in city, county, state, or across the country, the Bell Telephone Companies are equipped to provide it. They have the facilities and years of know-how. And the on-the-spot manpower to insure efficient, dependable service.

For over three years, the local Bell Telephone Company has provided the closed circuit ETV network which successfully serves thirty-six schools in Washington County, Maryland.

In Louisville, Kentucky, telephone company facilities now connect five elementary schools. In New York State, they serve a high school and seven other schools in the Cortland area.

In San Jose, California, they link four schools with the campus of San Jose State College. And in Anaheim, California, eighteen schools are served by TV.

The largest of the many current educational TV projects is called Continental Classroom. The Bell System is one of the business organizations which support it.

In this great "classroom," about half a million people get up early each weekday to view a half-hour lecture on Modern Chemistry on their TV sets at 6:30 A.M. This 32-week college course goes from coast to coast over Bell System lines.

The Bell Telephone Companies believe their TV transmission facilities and know-how can assist educators who are exploring the potential value of educational television.

They welcome opportunities to work with those interested in this promising new development.

BELL TELEPHONE SYSTEM

Volume 75 Number 1

The American City

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ASSOCIATED PUBLICATIONS

Contractors and Engineers		OVERVIEW
Municipal Index	MART	AMERICAN SCHOOL AND UNIVERSITY

LETTERS TO THE EDITOR

Rural Area Stymies City Sales Tax

In an article on municipal use of non-property taxes (p. 177, November 1959), the statement is made that Ogden, Utah, has adopted a ½% sales-use tax to be collected by the state and remitted to the city.

Ogden *has* adopted the sales tax, but has not yet been able to use it for a variety of reasons of interest to municipal administrators.

The last session of the Utah legislature, recognizing that major cities need new sources of revenue, authorized cities to adopt this tax. Many have, including Salt Lake City. The legislature did not desire a Balkanization of the retail economy. This splitting it into fractions would occur if one city adopted the tax and its next adjoining city did not. It, therefore, required that the sales tax be adopted on at least a county-unit basis with the concurrence of the Boards of County Commissioners.

Ogden, in Weber County, represents approximately 72,000 of the county's 108,000 residents. Two members of the County Board live outside the city. By 2:1 vote, the County Commissioners have refused to approve a county-wide sales tax, although the city councils, both of Ogden and of a number of other smaller communities in the county, have requested them to do so by formal resolution.

The arguments in opposition are frustratingly fascinating. Some say that the city does not need the revenue, which was earmarked in advance of its adoption, should the County Commissioners consent, to a program of capital improvements. The city has owned a number of park sites for more than 20 years which are totally undeveloped for want of capital improvement money. Opponents argue that the city does not need these parks but should sell them for subdivision development, thus obviating the need for any capital expenditure upon the parks.

Essentially it appears that the rural-urban conflict of interest which had to be overcome in the legislature in the course of advocating the passage of this particular urban municipality relief has now been transferred to the county level.

Although the intention of the legislature in its passage was to give relief to the principal cities of Utah, confined to five counties along the face of the Wasarch Mountains, many of the counties adopting it are in the thinly populated southern and western portions of the state.

Efforts will undoubtedly be made at the next session of the legislature to amend the existing sales tax authorizing legislation by removing the requirement for the approval of the County Commissioners as a prerequisite. Also an effort will be made to pass an act which would prohibit counties in Utah from levying taxes upon property within first and second class cities (Salt Lake City, Provo and Ogden) for the purpose of giving municipal-type services outside the city limits, unless the county similarly gives the same service within the city. Our studies indicate that Ogden contributes approximately $314,000 per year to county government for such services as fire protection and fire fighting outside the city limits, and others strictly of an urban municipal nature, with none of those services being rendered by the county to property within the city limits.

The point is that it is useless for cities to fight their battles in rurally dominated legislatures and win if the conflict merely is to be transferred to rurally dominated counties.

WALTON R. L. TAYLOR
City Manager
Ogden, Utah

Foamed Asphalt

City of Detroit, Inter-Office

TO: MR. GLENN C. RICHARDS
Commissioner
Department of Public Works

FROM: MR. M. GREENBERG
Engineer of Tests

SUBJECT: THE AMERICAN CITY
Comment on article—
"Foamed Asphalt"
December 1959, p. 88

Generally speaking, the use of foamed-asphalt surface mixtures and patching requires special mixers and injector nozzles which are pictured. The use of clay material as mineral fines might not perform adequately since clay has a very high preferential swell characteris-

(Continued on page 18)

on saving money at every turn of the road...

the MASSEY-FERGUSON 406 TRACTOR SHOVEL *speaks for itself:*

"HAVE DONE... CAN DO!"

The Massey-Ferguson 406 can do the same for you — in making a profit and reducing equipment costs — as it has done for others!

Saves time! Speedy *"Instant Reverse"* allows fast in-and-out maneuvering.

Full loads! Handles 1 cu. yd. (SAE rated) with ease because of direct thrust from low pivot points and 9300 lbs. pryout power.

High dump! Telescoping arms clear 126" at hinge point.

Maximum visibility! Operator is positioned to see front, rear, and both sides for maximum efficiency and safety.

More jobs! Handles both big and little at a profit. Numerous attachments — including famous Massey-Ferguson Backhoe — give low-cost versatility.

Costs less to own! Compare and you'll see!

featuring **INSTANT REVERSE** with **TORQUE CONVERTER**

Go Forward or Back... at a Touch of your Toe!

NO SHIFTING... NO CLUTCHING... NO LEVERS TO PULL

Instant Reverse is found only in Massey-Ferguson Industrial Equipment. Just press one foot pedal to go forward . . . switch to another to go reverse. Acceleration is built in each pedal. Has five different speeds — equal in each direction so you can pre-select proper gear range for each job. A demonstration will quickly show you its many advantages.

Why Wait? — Set a Date — We'll Demonstrate!

MASSEY-FERGUSON INDUSTRIAL DIVISION

Block 1000 South West St., Wichita 13, Kansas

Producing Sizeable Power for the "Sensational 60's"

MF 60-4

Some Urban Trends for the 1960's — and Beyond

The new year, introducing a new decade, has the refreshing effect of shocking us into reappraising our aims, and stimulating a study of the road to these goals.

The basic aim of our urban governments is simple—so simple that it escapes many. It is to provide those conditions that will encourage raising the standard of living within the framework of a free people.

The journey to this goal is fast, exciting, and full of responsibilities. The speed confuses many and frightens some. Demographers tell us that if the nation's present rate of growth continues, our population will be somewhat over 300 million by the year 2000. Some view this with fear. Whether we do or not, we must recognize the responsibilities it presents to plan for it wisely.

In this small world of ours, we must view our growth from a global perspective. Of all the major land areas in the world, the North American continent has the least population. Moreover, the United States, with its 180 million people, increasing at the rate of 1.2% per year, is certainly not growing the fastest.

Incidentally, those who worry whether our country has land enough for our growing urban areas should set their minds at ease. Municipalities require less than 1% of the total land area. By 2000, it should be no more than 2%. Transportation services alone require more land than cities.

The future is promising. Economically, this nation's urban areas can expect the 1960's and beyond to continue increasing the real income of its people. Economists seem as universally agreed on this point as members of this profession can be. This means that the standard of living will continue to rise, that men and women can expect to be better rewarded for constructive work, that urban areas will have a sounder financial base.

We can expect the suburban home to lose popularity to the apartment in the years ahead. When investigators interviewed 10,000 Texans and found that 13½% wanted close-in housing, one cannot miss the trend.

We can expect urban renewal to increase, both by federal participation and by vigorous local action. This type of project, slow to get started, is gradually gaining popular vigor and will have its sure effect in large cities and small.

We can expect cities to get somewhat cleaner, although this change will not be easy. As long as the men who clean the streets receive a reasonable wage, cities will have difficulty affording the hand-swept cleanliness of many European cities where the wage scale is not so high. Moreover, the average American still needs to be convinced that one of his constitutional rights is *not* that of throwing a cigaret butt or an empty cigaret pack into the gutter.

Mass transit will improve as downtown areas revitalize, and as the idea grows that this is a public service and not necessarily a profit-making enterprise.

Water supply will receive limited help by distillation of sea water or some similar development. Already, these methods can produce potable water at less than $1 per thousand gallons, making this source interesting in certain areas. We also can expect greater return of purified sewage effluent to recharge groundwater supplies, and will see industry take an increasing interest in the purified effluent as a source of process water.

The use of incinerators for refuse disposal is bound to increase, as urban areas grow and sanitary-fill sites become more scarce. Moreover, we can expect alert municipal administrators to make increasingly resourceful use of the heat generated.

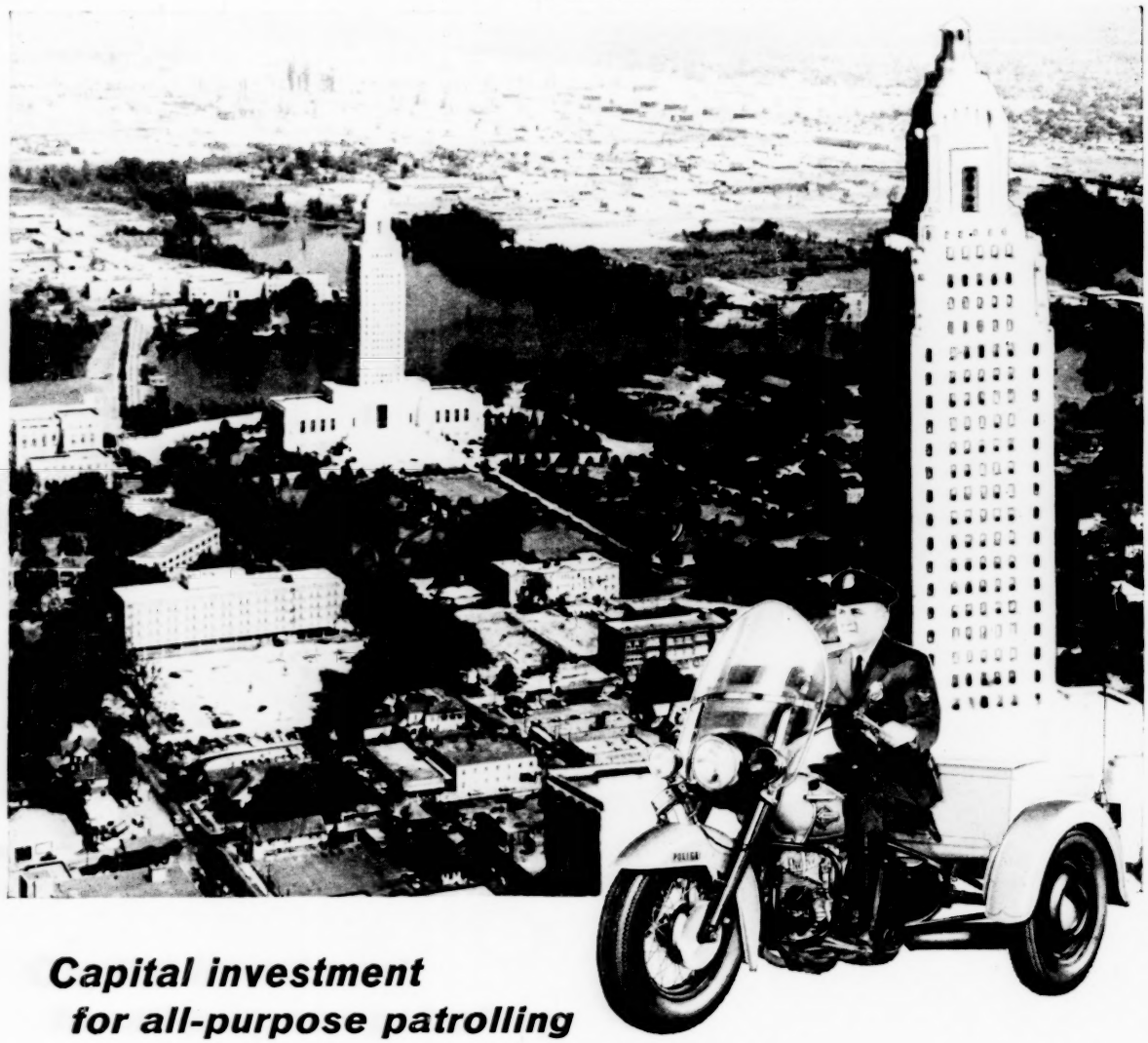
Metropolitan government, more popularly inter-urban cooperation, will increase. Gradually, the idea will take hold that the proper way to study a region is *not* by some 16th Century standard—that of visualizing an area and putting an imaginary wall around it. Nor is it one of considering those communities outside the "central" city as second-class parasitical growths. All have influence in the modern urban scheme. All have a contribution. None will be ignored.

We can expect the quality of local government to continue improving. We can expect an added number of cities to draw on the services of that dedicated group of men, the city managers, who stake their professional careers on the proposition that a democratic, urban government *can* be efficient and honest—that a free people *can* make wise policy decisions.

One would have difficulty finding another time in the history of man when dynamic changes have occurred the equal of those in this past portion of the 20th Century. They frighten the pessimist who dourly forecasts that the dawning nuclear age will destroy civilization. They inspire the optimist who expects it to make outer space his suburb. We stand confidently in the latter group.

Stretching the long arm of the law in Louisiana's capital

BATON ROUGE, LA. — Day and night, 13 Harley-Davidson Servi-Cars cover 30.2 square miles in this progressive city of 125,000.



Capital investment for all-purpose patrolling

...versatile Harley-Davidson Servi-Cars

Here's an investment that pays off by stretching both equipment and manpower dollars. Officers on Harley-Davidson Servi-Cars are busy men about towns large and small — patrolling business and residential areas . . . marking cars . . . checking meters . . . shifting from intersection to intersection for spot traffic direction. Just as important, Servi-Cars pay off in economical operation and simple maintenance.

They're crime-stoppers, too! Don't forget that "seeing is behaving." The Servi-Car mounted officer's street-level ability to see and be seen discourages potential lawbreakers.

And Servi-Cars are kind to your officers. The smoothest riding three wheelers ever built, they offer cushion comfort . . . reduce rider fatigue. See the new Servi-Car at your dealer. Or write Harley-Davidson Motor Co., Milwaukee 1, Wisconsin for informative new folder.

HARLEY-DAVIDSON

Police Motorcycles

After classroom instruction, the young students put what they learn into practice.

Landlocked Brookfield, Ill., trains . . .

Teen-Age Outboard Skippers

Outboard boating in America has taken unbelievable post-war popularity strides that have affected even landlocked Brookfield, Ill.

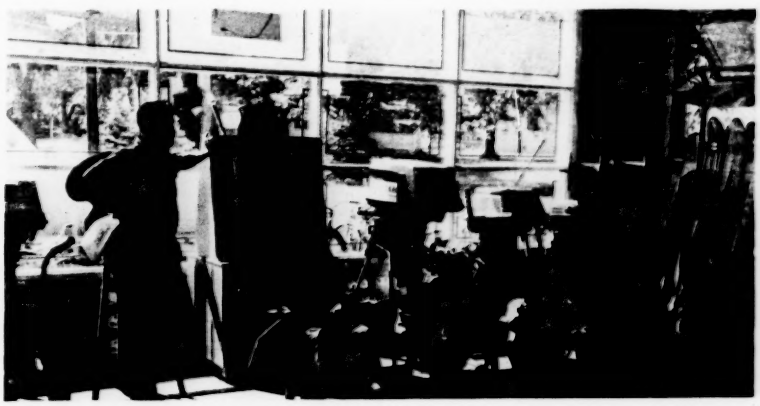
This village, without navigable waters, has instructed its recreation department to offer guidance in boating to enthusiastic youngsters as a means of providing both recreation for the present and education for the future.

A neighboring community had access to the small but navigable Desplaines River plus a public boat-launching ramp erected by the Cook County Forest Preserve district. Nearby, also, was an Evinrude outboard boating and service shop managed by a man anxious to cooperate. He offered his shop as a classroom for weekly meetings in an eight-week outboarding course and his dock and boat as a proving ground.

We first prepared a basic plan to teach rules of outboard boating operation, safety, care and maintenance; then we contacted the Outboard Boating Club of America for advice and assistance. OBC offered to help by way of pamphlet material, films and consultation. They also aided in program planning and presentation.

This combination of talents developed an informative and workable course to cover basic fundamentals of outboarding as well as experience on the water in a learning situation. Here, under close supervision, members were afloat and operating an outboard—the first time for most of them.

WILLIAM H. RADKE
Recreation Superintendent
Brookfield, Ill.



Brookfield teen-agers receive instruction from an expert in how to have fun and safety with an outboard motor.

One of three No. 12 Motor Graders bought by Dallas County on "best bid" basis.

Why Dallas County, Texas, chose

3 CAT No. 12 Motor Graders on "Best Bid"

After studying the cost of equipment, officials of Dallas County, Texas, recently approved the purchase of 3 new Caterpillar No. 12 Motor Graders. The reasoning was simple, according to the Dallas *Times-Herald:*

"Comparative figures from the county auditor indicated the new Caterpillar No. 12 Motor Graders, as opposed to other makes of machines, would have the lowest last cost. Assuming the machines would operate a total of 16,000 hours over an expected 8-year life, the *cost of repairs* for each Cat Motor Grader was estimated to be $3,264; Brand B, $15,073; and Brand C, $16,364."

In addition, according to previous cost records, a 1956 model No. 12 had been operated by the county for 2,524 hours without repair to the clutch. Total repair costs for the machine had been less than a dime an hour.

In short, cost records proved Caterpillar offered the county the lowest "best bid" dollar for dollar.

More and more public and governmental officials, like those in Dallas County, have discovered that the "best bid" method of machinery purchasing—actually lowest total cost—points to Caterpillar. Here's why: greater dependability, lower repair costs, better performance, and higher trade-in value for every piece of Cat-built equipment.

Get the full story from your local Caterpillar Dealer. Let him prove by actual demonstration how Caterpillar can save taxpayers' money in your community.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BUY LOW TOTAL COST—
BUY CAT MOTOR GRADERS

Disk harrow is towed over a Springfield street, reducing oil-surface chunks to easily worked pieces.

Disk Harrow Reworks Road Surface

Springfield, Ill. is successfully reworking oil-road surfacing by teaming a disk plowing harrow with a motor-grader scarifier. The harrow usually requires only one or two passes to reduce scarified material to aggregate size.

In reclaiming chuck-holed oil roads, the surface was first ripped with the scarifier, then the Rome disk-plowing harrow was towed over the ripped material by a Cat Traxcavator, reducing the chunks to small, easily blended pieces. It was found that in temperatures above 70 F the road surface could be cut directly with the harrow. Below 70°, it had to be scarified.

After reduction by harrowing, the material was bladed and leveled with the motor grader, rolled to specified smoothness and density, and oiled when necessary. No elevating or special handling was required.

Small City Saves on Resurfacing

Left-over material on a nearby paving contract enabled Loup City, Neb., to resurface eight blocks of 66-foot-wide main street for only $6,000. This gave them a professional paving job for about 50% less than it would have cost under normal conditions, according to Murel Hensley, president of the council of the 1,500-resident community.

Limited funds and limited use made purchase of new paving equipment impossible—and experiments in buying used machinery had proved too costly because of frequent repairs and inexperienced operators.

The solution to Loup City's problems came when contractors, resurfacing short stretches of asphalt state roads in the vicinity, were contacted and agreed to apply surplus material to Loup City's streets. They also agreed to resurface other streets during slack periods at reduced costs in order to hold their experienced crews.

The first experiment worked well for all concerned. A contractor doing a five-mile stretch of state highway agreed to cover the most cut-up streets in the business district, donating the labor, and charging $6.25 per ton for hot-mix delivered 12 miles from the mixing plant, plus a charge of 50c per ton allocated as equipment rental.

He threw all of his equipment and men into the job, and provided an excellent surface to the designated blocks in a fraction of the time that it would have taken with city personnel.

There are other streets that bear the scars of repeated water-line repairs, additions and other utilities changes, and the contractor has assured city officials that, with advance notice, he will stockpile and provide enough high-grade material to take care of all Loup City needs.

By covering the entire cost of the operations in the purchase of materials and by taking advantage of the contractor's quantity (ten-car-lot) prices, the city has been able to meet its problems at reasonable cost, without resorting to public bidding that would be required by law if the work were done on a project basis.

NEW...FROM

This equipment will help you

HOBBS HYD-PAK

Manufactured under U. S. and Canadian Patents
Other Patents Pending

60 model

install on any chassis

60 model has lower loading height, watertight body, 3 "extra" yards

1960 HOBBS HYD-PAK's loading hopper opening is 4" closer to the ground, just 19" above chassis frame — less "lift" for the pick up men! Hopper's watertight, too, because hydraulic cylinder which drives packer blade now is above floor line, eliminating need for slot in hopper at floor level.

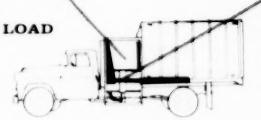
HOBBS HYD-PAK bodies continue to give 3 cu. yds. more compressible capacity than other packers of comparable weight and cost (see specs below); means less rolling stock, fewer trips to dump. They're also • SAFE — loaded at curb side, not from street; safety switches both sides • SIMPLE — all types refuse is loaded, *without selection*, manually or via containers • SANITARY — no odors or liquids escape • SPEEDY — high compression cycle completes in 30 seconds or less; simple rear dump also saves time • STRONG BUT LIGHT — steel construction is fully reinforced, but lightweight; no need for big expensive trucks.

HOBBS HYD-PAK MODEL 60 SPECIFICATIONS

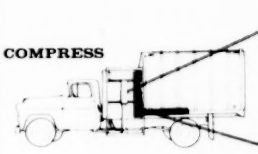
BODY MODEL		6013	6016	6020	6024
Total Capacity	Cu. Yds.	16	19	23	27
Compressible Capacity	Cu. Yds.	13	16	20	24
Length	Inches	170	170	194	230
Width	Inches	95	95	95	95
Top of Frame to Top of Body	Inches	71	81	81	81
Weight, Body	Lbs.	6000	6900	7300	8300
Average Load	Lbs.	7700	9500	11,800	15,500
Body and Load	Lbs.	13,700	16,400	19,100	23,800
Recommended Chassis	Inches, Min.	102	102	120	154
Cab to Axle	Max.	126	126	138	170

HERE'S HOW HOBBS HYD-PAK WORKS:

Refuse is loaded, *without selection*, into extra large hopper openings; hinged doors in hopper roof can be opened if necessary.

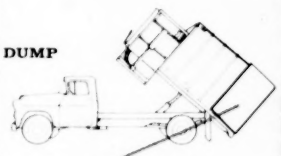


Compression cycle is started by convenient lever extending to both sides of unit; safety switches are right below.



Vertical sliding doors move up automatically (on deluxe model) to cover openings.

Hydraulic action moves compressor blade back thru hopper, packing refuse into main storage area. Retaining angles hold load as blade returns for reload.

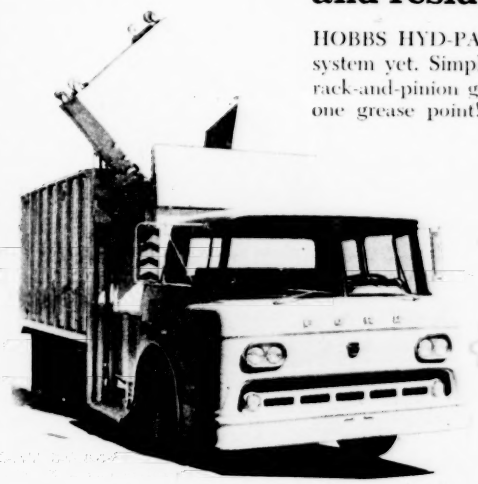


Rear doors are opened and load is dumped hydraulically, quickly and smoothly. Body is slightly wider at rear so even tight loads come out easily.

HOBBS HYD-PAK DIVISION, HOBBS TRAILERS, FORT WORTH

HOBBS HYD-PAK
save money on refuse collection

(PATENTS PENDING)



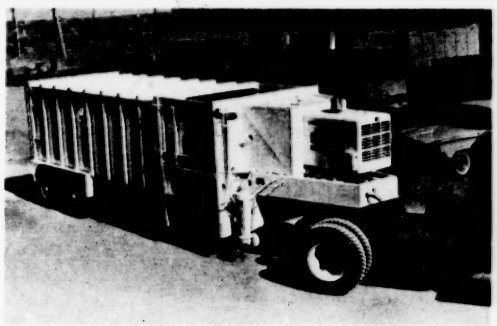
Container system handles commercial and residential pick-ups on same haul

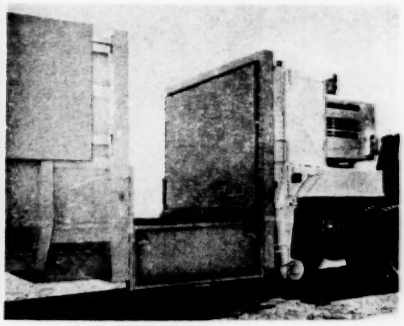
HOBBS HYD-PAK brings you the simplest, lowest-in-cost container system yet. Simple and safe because it's built around positive-action rack-and-pinion gear — no cables or long attachment arms (and only one grease point!). Dump and compression cycles are co-ordinated automatically because power from both comes from same hydraulic source. Low-cost because it handles both 1¼- and 2-cu. yd. steel containers *and* manual loads on hauls where pick-up methods vary — from street, dock or intermediate levels. At left, note stability at top of container-dump cycle.

THIS IS ALL THERE IS TO IT: Lift bar at right installs on any HOBBS HYD-PAK, makes it a container-loader. Bar folds down out of way when manual loading is desired.

Trailer-Pak has volume, versatility

Trailer-Pak is the economical, time-saving answer to long, high-density routes, far-away dump sites, large operations with few trucks and personnel. Big enough to work as transfer unit for smaller trucks, yet short enough (31') for alley work. Offers all rugged construction features of HOBBS HYD-PAK bodies, plus heavy-duty springs to absorb road-shock. Packer blade compresses refuse into storage area in normal loading cycle. To unload, blade moves entire length of trailer.





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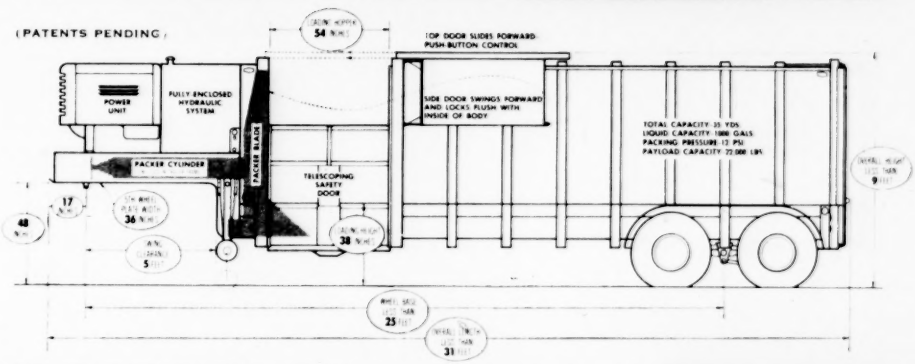

HOBBS HYD-PAK DIVISION, HOBBS TRAILERS

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CALL, WIRE OR WRITE TODAY FOR DEMONSTRATION

HOBBS HYD-PAK

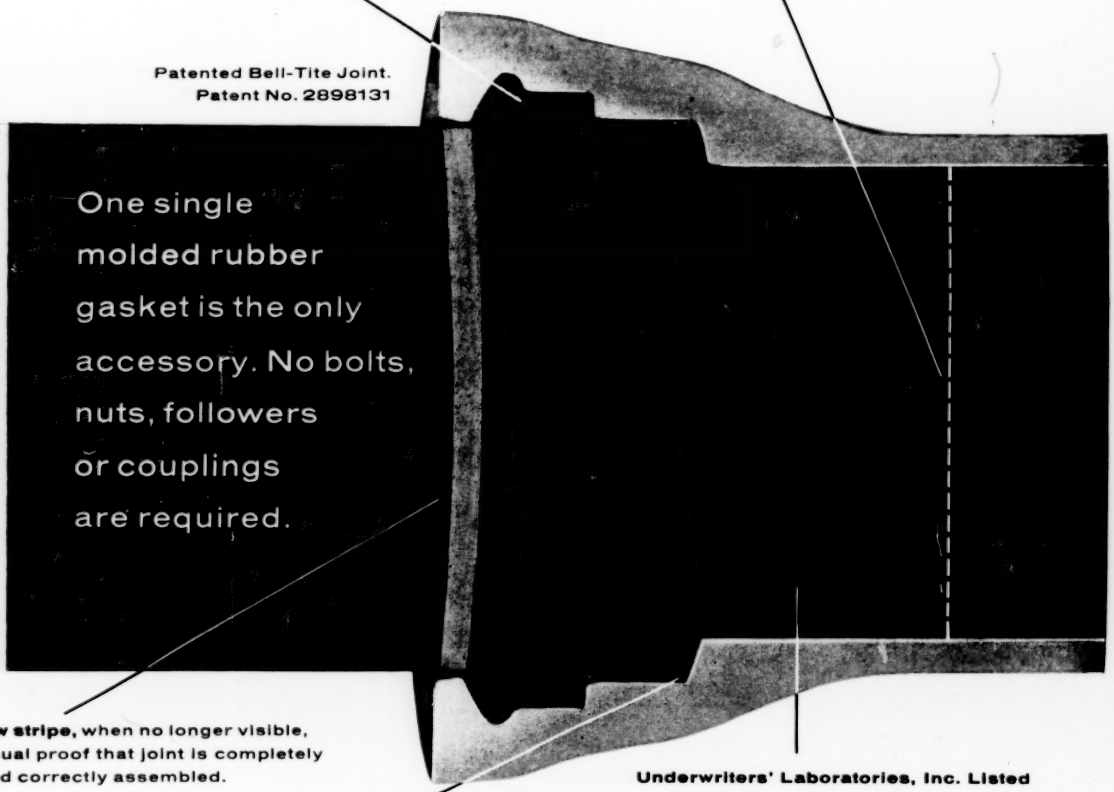
CLOW

Quick, Bottle-Tight Seal

Large, thick section gasket of long-life high durometer rubber forms pressure-tight seal.

Bell-Tite Joint Pipe available in diameters from 3" thru 24" in 18 foot lengths.

Patented Bell-Tite Joint.
Patent No. 2898131



This yellow stripe, when no longer visible, provides visual proof that joint is completely and correctly assembled.

Underwriters' Laboratories, Inc. Listed for working pressures up to 350 psi.

Ample deflection to meet casual curves or grades is provided by space in socket of the bell.

CLOW CAST IRON PIPE

Cast Iron Pipe Plants at
BENSENVILLE, ILLINOIS • BIRMINGHAM, ALABAMA • COSHOCTON, OHIO

CAST IRON PIPE

You can install

CLOW BELL-TITE® JOINT PIPE

as fast as you can dig a shallow trench

LOWER
pipe into trench

Pictures show CLOW 20" Bell-Tite Joint Cast Iron Pipe being installed to provide water for a midwestern industrial development. CLOW Bell-Tite Joint Cast Iron Pipe was selected because of its proved long life and the ease and speed of installation. Hulett Corporation, contractors.

SWING
into open bell

SEAL for
pressure-tight
joint

JAMES B. CLOW & SONS, INC.
201-299 North Talman Avenue, Chicago 80, Illinois

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Eddy Valve Company
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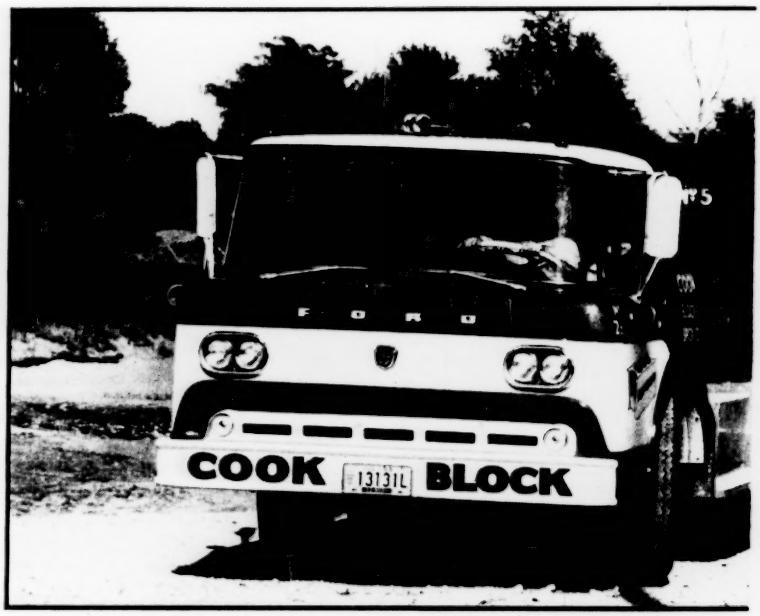
Here's another reason why Ford Trucks are your best buy!

"OF ALL THE MAKES WE'VE TRIED FORD TRUCKS GIVE US THE LOWEST MAINTENANCE COST!"

ANOTHER REPEAT BUYER OF FORD TRUCKS

Virgil E. Cook, owner of Cook Block and Brick Co., is convincing proof that there is still plenty of opportunity in American business for those sound planning, hard working individuals who want to own their own business. Starting from scratch just 13 years ago, he now owns and operates one of the largest concrete products plants in Eastern Indiana. The workhorses in his fleet of 16 trucks are three Ford Tilt Cab Tandems that are used to haul sand and gravel to the plant and make deliveries in and around Anderson.



Hard-working Ford CT-950 tractor leaves Cook gravel pit with 18 yards of aggregate. Aluminum walking beam and rubber suspension system of tandem axle assembly reduce chassis weight, permit higher legal payloads.

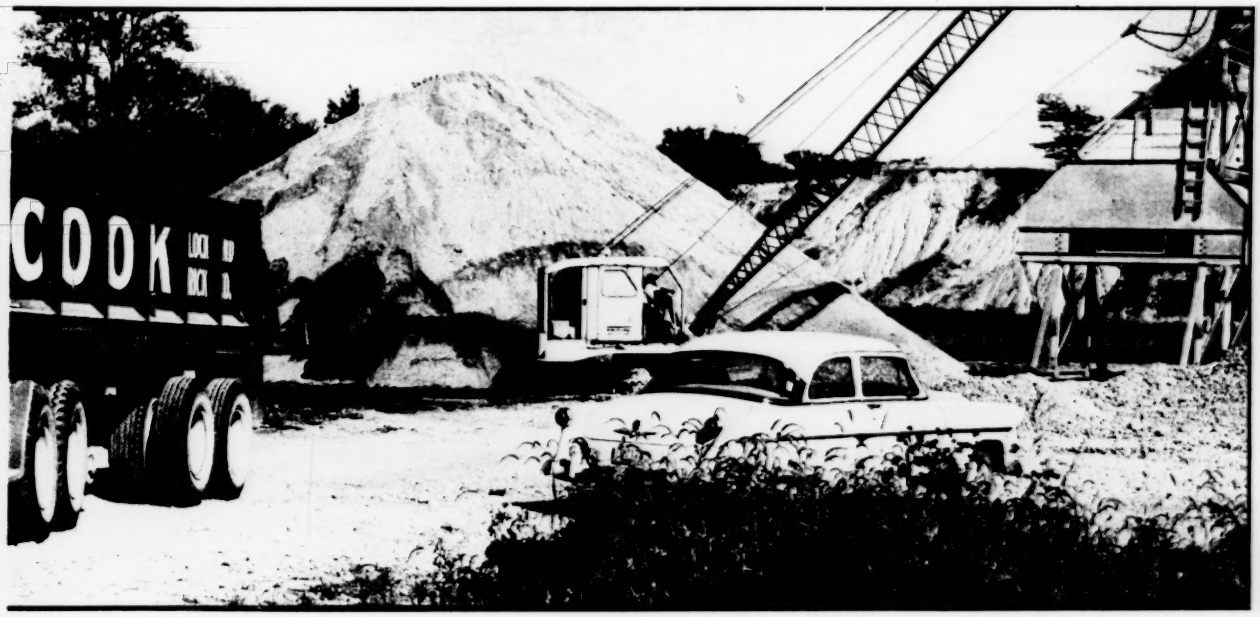
Cook's CT-850 with special flat-bed body and Side-O-Matic unloader delivers blocks right to the job site. Unit carries 600 concrete blocks and spots them where needed.

"Our experience has proved that Ford Trucks can be operated at substantially lower maintenance costs than any other make we've tried. And, equally important in a fleet like ours, we find that our Fords spend much less time in the shop. None of the Ford units purchased since 1958 have been in for major repairs and I am still amazed at the way the older ones keep going.

"The best truck we've ever owned is a 1954 Ford C-700 that consistently carries a load of 350 to 400 blocks over all types of terrain. In spite of this severe work it ran 125,000 miles before we replaced the engine. This unit now has over 140,000 miles on the original ring gear and pinion and it went 60,000 miles before we relined the brakes and put in a new clutch. This is outstanding mileage when you consider that we've realized as little as 12,000 miles from competitive ring gear and pinion sets. Clutch and brake life obtained with other makes in identical service was only 20,000 miles. It's results like this that keep our costs low and convinced us that we should stay with Fords when we bought our bigger trucks in '58.

"Our 1958 and 1959 Ford Tilt Cab Tandems give every indication of equalling or surpassing the fine records set by the C-700. The two CT-950 tractors hauling sand and aggregates to our processing plant breeze through traffic and take the hills like they weren't there at all. Our CT-850 equipped with a flat-bed body has the power and traction to deliver finished products anywhere. With Ford's tilt-cab design we get a real plus as far as payload is concerned because we can carry at least 2,000 pounds more weight on the front axle.

"We buy Ford Tilt Cab Trucks because we think they're the best engineered and most modern gasoline trucks in the heavy-duty field. Here at last is a truck built to permit big legal payloads with enough power to move these loads at economical speeds. We pride ourselves on our modern and efficient equipment and consider our Fords one of the most valuable assets of our business."



'60 Fords are built for longer life . . . with Certified Durability!

Whatever your job . . . wherever you do it . . . you'll discover just as Mr. Cook did, that Ford Trucks are the best investment for your transportation dollar.

Certified results of tests conducted by America's leading independent research organization (name available on request) confirm the fact that Ford Super Duties have been refined for still more durability! Automatic radiator shutters, improved electric fuel pumps and redesigned wiring harnesses are typical of the advancements to be found in these units.

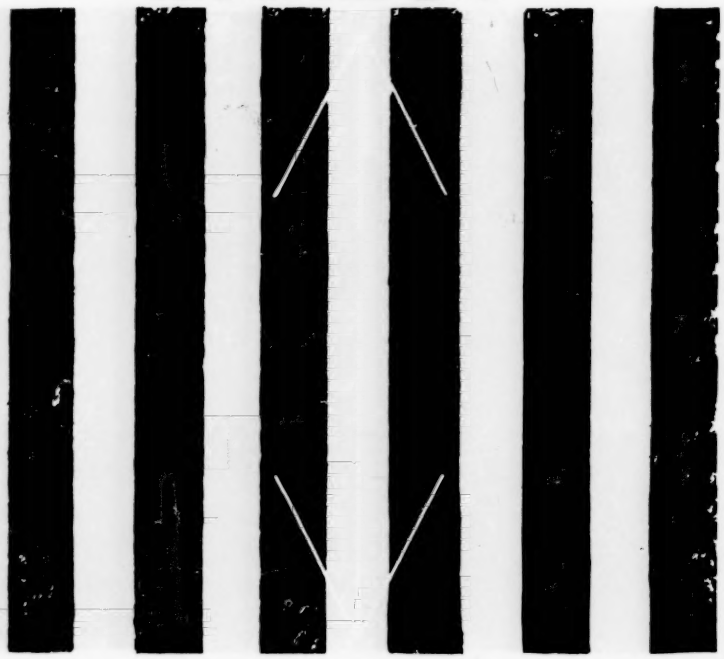
Automatic radiator shutters reduced the coolant temperature variation recorded in severe mountain road tests from a 79° range to a 20° range. Engine operation with coolant temperatures in the 167° to 187° range means less expansion and contraction, more efficient combustion and better lubrication . . . all of which contribute to longer engine life.

Dynamometer tests showed *no vapor lock* with Ford's submerged-type electric fuel pump at temperatures up to 200°. Incipient vapor lock with mechanical fuel pump resulted in a power loss of 9% under the same conditions. Shaker table tests plus constant exposure to oil, water and heat proved 1960 wiring harness to be *three times longer lived.*

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . BUILT TO LAST LONGER, TOO!

VERTICAL TYPE BALLOT



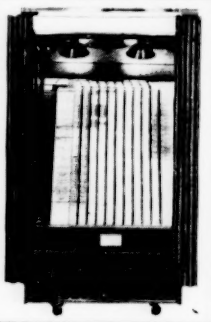
for better elections

The face of the Shoup Voting Machine is arranged in party columns and office spaces conforming to the familiar vertical pattern of the Australian Ballot, thereby making it the easiest machine to use. This means, the voter has no difficulty even if it is his first experience with voting machines. It also means equal advantage to all candidates for a particular office, since the preferred "first row" positions which have so often distorted election returns are completely eliminated.

Shoup Voting Machines have 9 columns for listing candidates and 1 column for propositions to be voted on, and are available with 50, 40, or 30 rows. This maximum flexibility plus the capacity to carry up to 500 candidates, means that Shoup machines can be adapted easily for all types of elections, including primaries.

Shoup Voting Machines are designed to fill every ballot requirement and comply with the election laws of all states. They are the only voting machines that duplicate the traditional vertical paper ballot with which voters are familiar. They are fool-proof and fraud-proof, reduce voting costs, and insure greater speed and accuracy of results. Impartial surveys prove the Shoup Voting Machine superior . . . more perfectly designed and constructed to meet the requirements of the voting public. That's why more and more communities, from the smallest to the largest, are using Shoup Voting Machines for better elections.

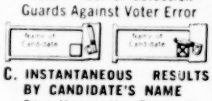
28 States Already Use Shoup Voting Machines



The ABC's of Superiority...

A. THE VERTICAL TYPE BALLOT (see illustration)

B. THE MOVING X MARK — Visual Proof of Selection — Guards Against Voter Error



C. INSTANTANEOUS RESULTS BY CANDIDATE'S NAME Directly on the Face of the Machine No Decoding Necessary

THE SHOUP VOTING MACHINE CORPORATION

EXECUTIVE OFFICES: 41 E. 42nd St., New York 17, N.Y. • SALES OFFICES: 1701 West End Ave., Nashville 3, Tenn.

the voting machine that looks like a ballot

(Continued from page 5)

tic in the presence of water. Detroit has investigated slurry-seal coatings by use of asphalt emulsions, but our experience has shown somewhat the same picture as cited in the article, that of the mixture's susceptibility to the vagaries of rain storms before the material has cured out. City equipment would have to be modified to try some manufacturers of these materials, but it certainly would be of interest as a possible substitute for coldpack. It was, however, of interest to note that tailgate heaters were used to re-warm the materials which were used for patching. To this end, some heating device for keeping the loads of coldpack warm that also could heat and dry the patch areas would help to make the City of Detroit's coldpack usable over a longer period and perhaps make its placement more assured.

From the subject article, it would appear that most applications are still used in what would be considered a small community, in which the amount of industrial traffic and on-street parking was limited. Dubuque, Iowa, is presumably a community about the size of Ann Arbor, Mich., having a 1950 census of about 40,000 people. From the picture of street application shown, the repetition of traffic and loads applied do not, of course, compare with our normal City of Detroit streets. The case history referred to appears to be measured in months, not years, and we would like to get a better picture of the performance characteristics.

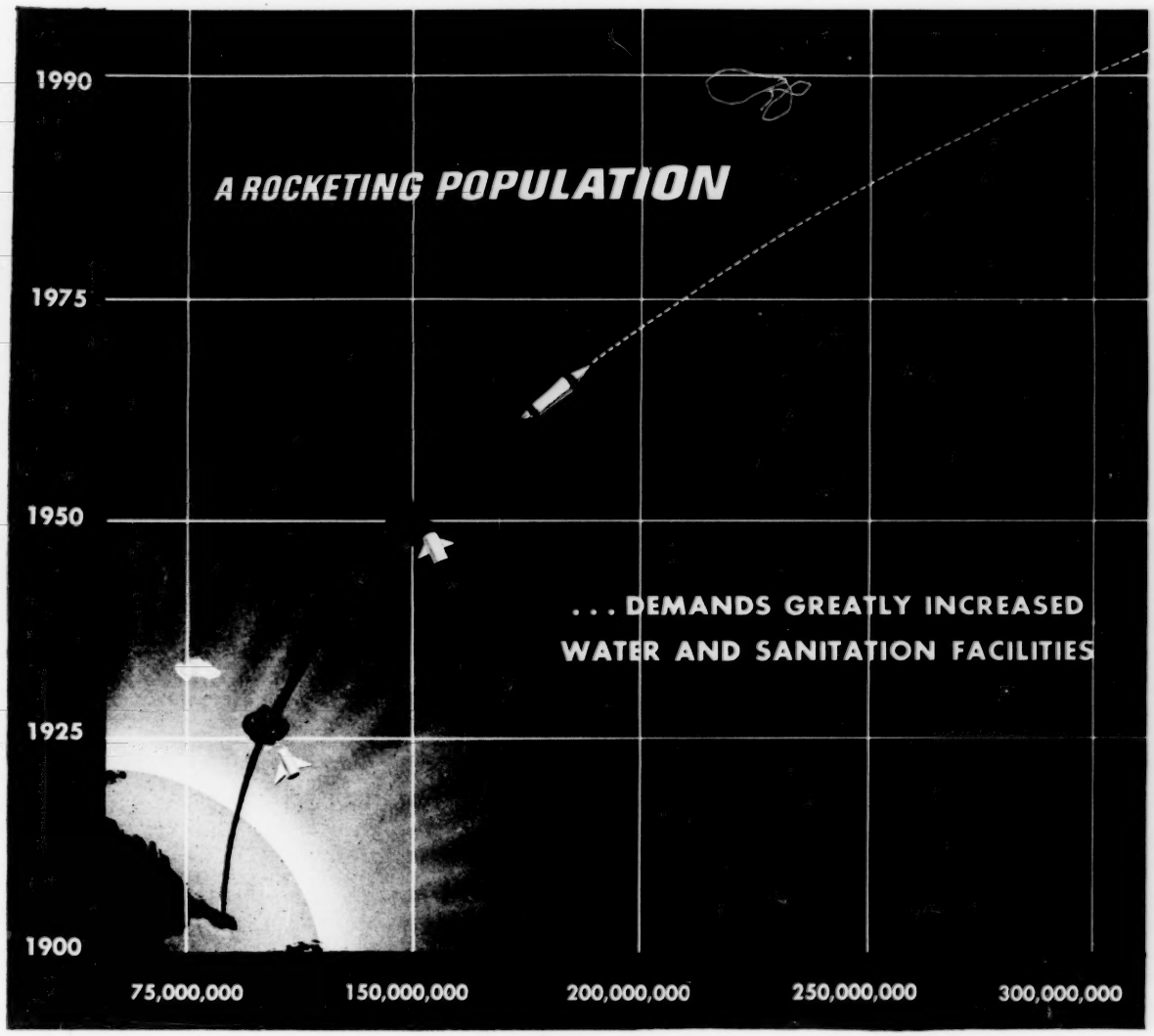
In general, I have not had the opportunity to observe the wearing characteristics of these foamed-asphalt mixtures, and I believe that perhaps they should be investigated. It may be that some side street surfacings may be effected over a lime fly-ash stabilization to give a low-cost surfaced street.

Profitable Urban Renewal

By return mail or collect telegram, please grant permission for reproduction of your October editorial, "How to Make Urban Renewal Profitable" (p. 7), to distribute to members and subscribers.

ROBERT M. TINSTMAN
Executive Secretary
Downtown Committee
Chamber of Commerce
Kansas City, Mo.

EDITOR'S NOTE: Permission granted.



Growth of U.S. Population in Millions:

1900—75; 1950—150; 1990—300 (Estimated)

And proportionate demands on water and sanitary facilities are increasing even more rapidly because of industry's ever-growing need for water supply and waste disposal.

Over the past half century Lock Joint Pipe Company has helped keep pace with the requirements of a doubling population by supplying millions of feet of concrete pipe for vital water and sewer lines. Virtually 100% of these are still in service and are operating with the same high efficiency as the day they were installed.

This unexcelled record for economy, efficiency and safety certainly recommends Lock Joint Concrete Pressure and Sewer Pipe as the ideal material to implement the long range plans of water and sanitation officials to meet the growing crisis.

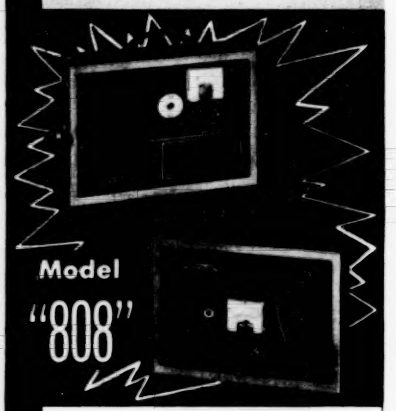
LOCK JOINT PIPE CO.

East Orange, New Jersey

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Mo. • Perryman, Md. • St. Paul, Minn.

Pressure • Water • Sewer • **REINFORCED CONCRETE PIPE** • Culvert • Subaqueous

ALL NEW!
FULLY
TRANSISTORIZED
Detectron
PIPE DETECTOR



In addition to the famous model "505" Detectron now offers its completely new model "808" with the first circuitry developed specifically for use with transistors. It is NOT merely an adaptation of earlier tube circuits.

Efficient under every known operating condition, effective in varying temperatures, thoroughly proven and trustworthy. Superior performance and reliability guaranteed.

EXCLUSIVE FEATURES

- Detects Deeper by all comparisons
- Automatic Switching for direct connection
- 95% Energy-Transfer-Ratio
- Printed Circuits, properly shielded
- Separate Oscillator System
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- Snap-Lok Connecting Handle
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Written Lifetime Guarantee on CMC parts and workmanship

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COMPUTER-MEASUREMENTS CO.
Utilities Instruments Div
12970 BRADLEY, SYLMAR, CALIF

The American City to Sponsor APWA Scholarship Award

The American Public Works Association's annual scholarship in the fields of municipal engineering and management will be sponsored by THE AMERICAN CITY, according to Jean L. Vincenz, APWA president. The award, in the past, has been sponsored by *Engineering-News Record*. Details of the present agreement have been developed by Robert Bugher, executive director of APWA, and Edgar M. Buttenheim, publisher of THE AMERICAN CITY. The award is presented at the Annual Public Works Congress and Equipment Show of the American Public Works Association.

Applications are now being received for the 1960 award and must be submitted, prior to June 1, 1960, on forms available from the American Public Works Association. The award consists of $1,000 for study in the field of public works engineering and administration at a school selected by the recipient and approved by the APWA. The winner will also receive an all-expenses-paid trip to the 1960 Public Works Congress and Equipment Show to be held in New York City, August 14-17.

The purpose of the award is to provide financial assistance to a deserving senior student or graduate of an accredited engineering school who wishes to continue his education in preparation for a career in the public works field. Candidates must have satisfactorily completed three years of study at an accredited engineering school as of the date the award is made, and must be enrolled at such a school, or employed by a municipal public works organization or similar agency.

A special committee appointed by the president of the American Public Works Association will select the recipient of the award. Selection is based on a rating system taking into account scholastic capacity, personal qualities, and the relative excellence of a paper written on some subject pertaining to public works. Demonstrated on-the-job ability will be considered in the case of an individual employed by a public works agency.

Five Aid - to - Education awards have been presented to date. Melvin Shelley, recipient of the 1955 award, is now City Engineer of Vernon, B. C., and Dan Blankenship, winner in 1956, will complete his military service in March 1960. Mr. Blankenship graduated first in a class of 120 engineer officers at Fort Belvoir.

Norman R. Bennett, winner of the 1957 award, is also serving his military service while David Vargas, winner in 1958, is still attending the University of Washington. Leonard W. Chapman, winner of the 1959 award, plans to complete his studies for a master's degree in municipal engineering at the University of California.

Further details and applications may be obtained from the office of the American Public Works Association, 1313 East 60th Street, Chicago 37, Ill.

Edward P. Decher in New Post

The elevation was announced on November 15th of Edward P. Decher from secretary to executive director of the 11-municipality Joint Meeting, which provides collection and treatment of sewage from member communities in urban Essex and Union Counties, New Jersey.

Mr. Decher, who has been an officer in the Joint Meeting since 1928, was president of the New York-New Jersey Chapter of the American Public Works Association in 1951. He was elected national president in 1955 and served the association during 1955-56 term.

He also was re-elected vice president and chairman of engineering and operations at a recent meeting of the Essex County Mosquito Extermination Commission.

E. P. Decher pauses during a recent inspection of Joint Meeting treatment facilities in Elizabeth, N. J.

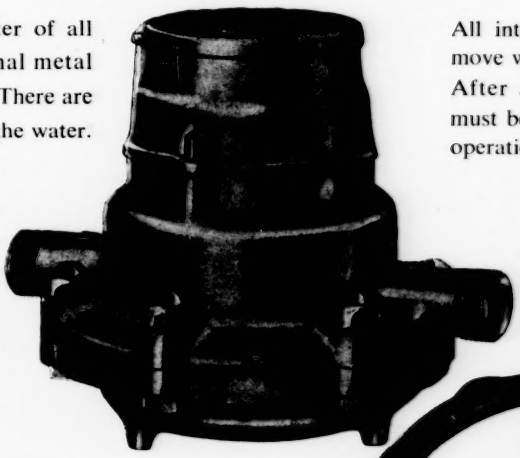
What Every WATER SUPERINTENDENT Should Know About

AMERICAN METERS

All Bronze
FROST BOTTOM METER

Now, a true frost bottom meter of all bronze construction . . . internal metal parts, meter body, frost bottom. There are no dissimilar metals exposed to the water.

When the ALL-BRONZE frost-bottom American Meter freezes, the center section breaks by tension immediately relieving the strain on all internal parts. The exact location and type of fracture are design controlled. Every American Frost-Bottom Meter breaks in the **same** manner, at the **same** pressure, at the **same** place.



All interior parts including the gears move with the ice and are undamaged. After a freeze-up, only the bottom must be replaced — a low-cost, simple operation.

The All-Bronze Frost Bottom feature is one of many outstanding, cost-saving features of American Meters all described in Bulletin 58. We will be glad to mail you a copy on request.

BUFFALO METER COMPANY
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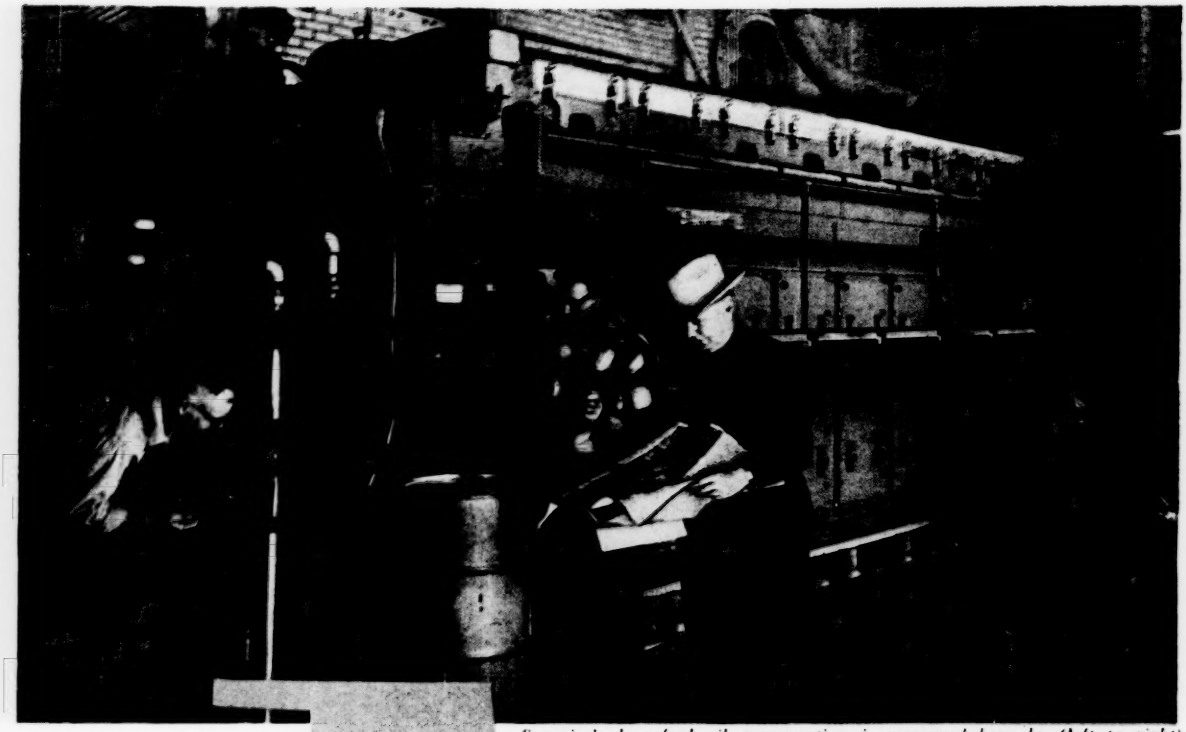
2902 Main Street • • Buffalo, New York



KINGFISHER ★ OKLAHOMA

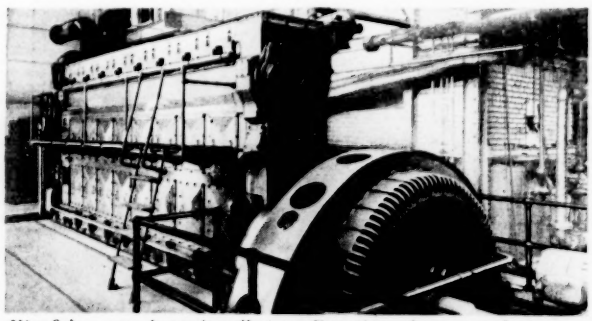
Superior's low fuel oil consumption is measured here by (left to right) Clarence Garrett, Plant Supt., A. B. Reese, Jr., White's Chief Field Engineer, and V. V. Long, Engineering Consultant, Kingfisher, Okla.

Civic thrift at Kingfisher prompts Superior Engine purchase

Kingfisher, an Oklahoma wheat belt town of 3700 population, is proud of its low municipal taxation. Earnings from the city-operated power plant pay most local operating expenses and finance periodic improvements and expansion to the plant itself. As usual, city fathers were both cautious and thrift-minded when a new engine-generator was needed recently. Their choice was a Model 80-GDSX-8 dual-fuel supercharged Superior which develops 1769 BHP at 360 RPM, to drive a 1250 KW generator.

Today many municipalities are making a "Superior decision"! Superior's highly developed open chamber combustion system is combined with a series of exclusive design developments and refinements to produce high power-to-fuel ratio. Diesels can run on a wide range of non-premium fuels including residuals, and dual-fuels operate on natural or manufactured gas, butane, propane or sewage gas. Even after extremely long periods of low-maintenance operation, replacement parts are seldom needed.

Superior's complete line of diesel, dual-fuel and gas engines range from 190 to 2150 HP, or 150 to 1500 KW. Get full information today by writing to:

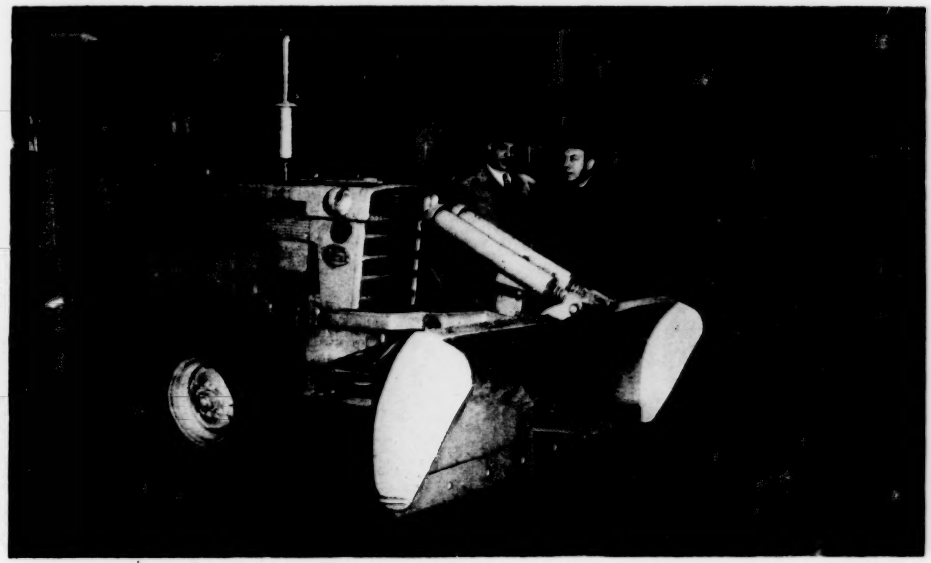


Kingfisher saved on installation. Experienced power plant crew poured base and completed hook-up.

Superior ENGINES · ATLAS Imperial DIESEL ENGINES · White DIESEL

White Diesel

WHITE DIESEL ENGINE DIVISION
THE WHITE MOTOR COMPANY
Plant and General Offices: Springfield, Ohio



Mayor Robert Wagner and Sanitation Commissioner Paul R. Screvane inspect the 100 Good Roads snow plows mounted on International rubber-tired tractors.

More Armament Against "Old Man Winter"

The recent delivery of 100 Good Roads snow plows mounted on International rubber-tired tractors brings New York City's fleet of cross-walk plows to over 500 units. The orange-painted plows have 7½-foot blades and are of the reversible type. Considered as the workhorse tools of the Sanitation Department in piling snow and freeing street intersections, they are also used for leaf-removal and occasionally, for heavy (mud) street cleaning.

In addition to the cross-walk plows, 1,800 Department of Sanitation trucks can be equipped with 11- to 12-foot plow blades for snow plowing.

Planning and Organization Make Up For Lack of Equipment

Few cities can afford all the equipment that might be needed to handle a severe snow storm. However, some lack of equipment can be made up by good planning and organzation.

Each fall we compile a list of available trucks that can be hired if and when they are needed and we also list contractor-owned equipment, such as motor graders and loaders, that can be called upon in case of emergency.

To make our own equipment more effective, we have set up a program that to date has proven entirely adequate for the type of weather experienced in this area.

Each foreman and the city engineer has in his possession a color guide map showing the location and sequence of operations. The main highways and downtown business areas are shown in red for they are the first to be cleared of snow or treated for ice. Next in importance are the primary arterial streets, shown in blue, followed by secondary arterials shown in yellow. Overpasses, underpasses and isolated intersections of arterials where traffic lights and similar control devices require frequent stopping are shown in brown. These areas receive prompt attention with salt and/or gravel when ice or packed snow conditions render them hazardous.

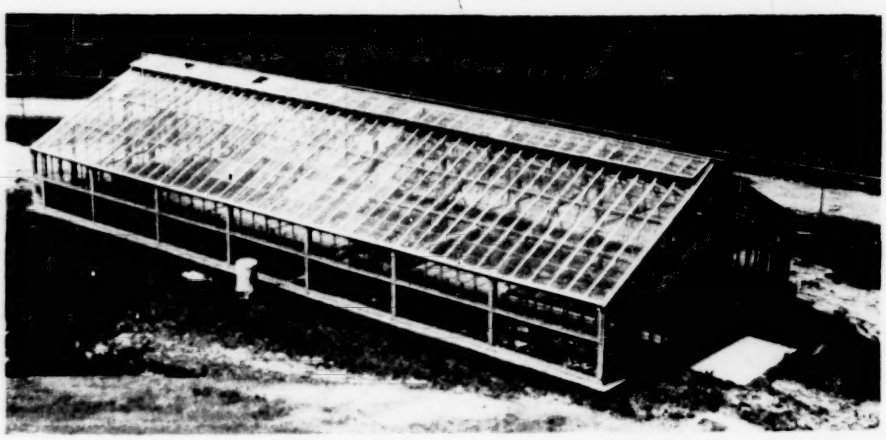
Our street crews normally work an eight-hour shift, five days a week and are available for all emergencies during these hours. However, they are on call at all times and police patrols report immediately any hazardous condition.

We do not attempt to remove snow from the main business district until after midnight following a snow-fall. We then move in with motor graders, windrow the snow to the center of the street and pick it up with loaders.

City-owned equipment includes two motor graders, an International TD-9 crawler tractor with a Ram rotary blower (loader), two Hough rubber-tired tractors, one with a regular bucket and one with a Glencoe rotary blower (loader), and six dump trucks.

For ice control we use one Scotchman spreader with No. 7 rock salt treated to reduce oxidation for light packed snow or ice. For heavier snow and ice conditions we use a salt-pea gravel mixture spread with two shop-built pull-type rotary spreaders.

E. W. Keiss, *City Engineer*
Grand Island, Neb.



In the seven years since the installation of the Plexiglas panels in the roof of this greenhouse structure, only three of the panes have been replaced.

Plastic Glazing Ends Breakage Problem

Substituting transparent Plexiglas acrylic plastic for glass saved the Borough of Brooklawn, N. J., approximately $2,800 over the past seven years. The switchover took place at the sewage treatment plant where a 24x56-foot greenhouse is used to cover the sludge-drying beds.

Prior to 1952, the borough had to replace an average of 200 glass panes annually, broken mostly by stones thrown from an adjacent playground. That year borough officials decided to replace all roof panes with Plexiglas, made by Rohm and Haas Co., Philadelphia, Pa., and installed 504 panels, each 16 inches by 24 inches by 0.250 inches in size. Since then only three panels have been cracked.

The panels have remained clear and unaffected by the long exposure to all kinds of weather.

C. D. Scott
Superintendent
Water and Sewer Department
Brooklawn, New Jersey

Asks City Participation in Sewerage Study

The Department of Sanitary Engineering of Johns Hopkins University is seeking the cooperation of communities in a nation-wide Residental Sewerage Research Project. The project will collect and compile data on the operation of existing residential sewerage systems for the Federal Housing Administration so that the agency can establish requirements for design and construction of public sewerage facilities in housing developments where it insures mortgage loans.

If a city consents to participate, flow measurements on portions of the existing system and searches through pertinent records will be made, as necessary, to satisfy the given objectives of the project. Communities best able to supply the data will be those in which it is possible to isolate residential areas from the remainder of the sewerage system and in which detailed operating records have been maintained over a period of years. Data collection will extend for at least one year—and possibly two.

FHA funds in limited amounts will be available to supplement the budgets of local public works departments cooperating in the project. Since these funds must come only from savings on mortgage loan insurance premiums, the agency is seeking communities that are willing to contribute local time and effort in gathering as much information as is possible with the funds available.

Since all communities should benefit eventually from the work, the university hopes that participants will not be hard to find. Springfield, Mo., and metropolitan Baltimore County are already cooperating in the project.

The purpose of the project is to determine:

1) the maximum, minimum and average per-capita sewage flows from residential areas of between 5 and 1,000 residences;

2) infiltration and exfiltration rates as a function of age for commonly used sewer construction materials;

3) the velocity of flow in residential sewers as a function of grade and quantity of flow;

4) typical operating and maintenance costs for lift stations used in residential areas;

5) the frequency and cause of stoppages in residential sewers;

6) the cost of maintenance for residential sewers as a function of grade and quantity of flow; and

7) the cost of maintenance for residential sewers as a function of manhole spacing.

In addition, advantage will be taken during the course of the study to collect additional information pertinent to the problem of sewering the rapidly expanding urban areas. The FHA also has expressed interest in examining operation and efficiency of "package" sewage-treatment plants.

City officials wishing to participate in this survey are invited to contact: John J. Lentz, Department of Sanitary Engineering, Johns Hopkins University, Baltimore 18, Md.

Top performance, high efficiency and less maintenance are factors which influence the selection of a short coupled pump. Layne Vertical Service Pumps fulfill these requirements and offer the advantages of lower installation and operation costs, low submergence requirements, simple alignment, no priming and less floor space demands. For any short coupled pumping job . . . specify Layne.

Write For Free Bulletins:

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World's Largest Layne Water Developers

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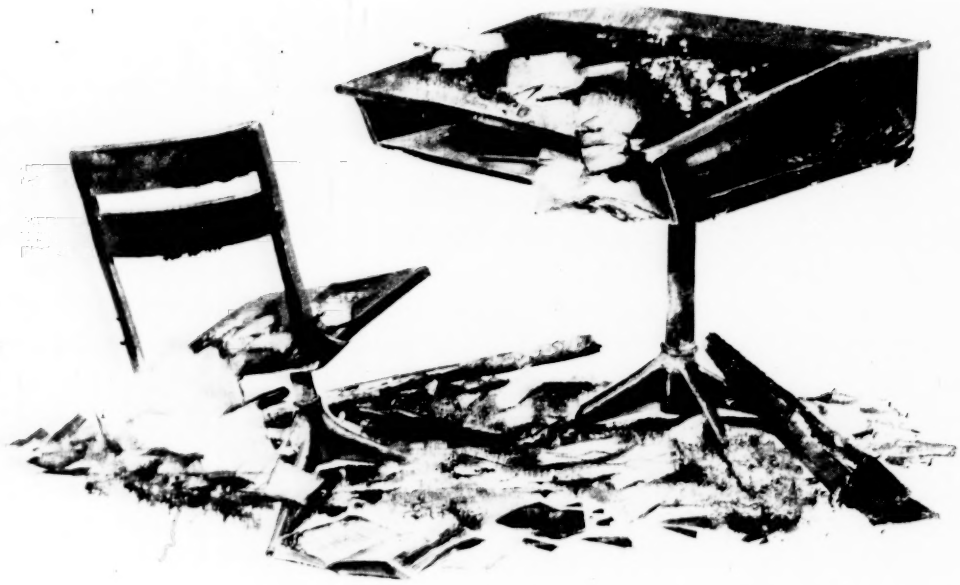
LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD
SALES REPRESENTATIVES IN MAJOR CITIES

How many lessons do we need?



Smoke floats across a schoolroom floor. A child screams, stumbles and falls into a doorway. Hysteria fills the hallways. Trampled bodies jam the exits. The fire's a roaring demon now consuming . . . consuming . . . consuming.

The story is not new. It happens in cities throughout our country — not just Chicago. And each time it happens the public is shaken from its apathy. We are suddenly aware because the statistics are children now. But for how long will we be aware? The ugly truth is — an aroused citizenry is not aroused for long. And again tragedy waits for its opportunity — *our own short memories.*

How many lessons must we learn? 12,000 people died last year in fires — 2100 were children. Yes, these are "statistics". But each was a "loved one" to someone. *And the real tragedy is — all of the lives could have been saved.* Here's something you can do to prevent such needless tragedies . . .

Have your Fire Chief, or School Board Official contact a Gamewell engineer. He is a highly trained expert in fire detection who can give you information and examples of fire alarm installations. And he will survey your buildings at no obligation to you.

He is backed by the largest plant in the world engaged exclusively in the manufacture of fire and other emergency signaling systems and equipment. Have your official call the nearest Gamewell Office — we will gladly accept the charges.

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LOrain 7-2269

Tallahassee, Florida
TAllahassee 3-3794

Gamewell®
FIRST... WHEN SECONDS COUNT

Midget Police Vehicle

New patrol car checks two miles of meters in about ten minutes.

Is it a car or a scooter, this newest member of the police force of Crisfield, Md.? It is a three-wheeled vehicle with four-speed transmission, with a speed of 40 mph, and it uses one gallon of gasoline for 40 miles.

Built by Chas. D. Briddell, Inc., a Crisfield metal products manufacturer, the new police car has a wheelbase of 70", measures only 52" at its widest section, and is just under 70" from the top of its warning blinker light to the ground. It is similar to the mail delivery vehicles the Briddell firm is presently producing under Post Office Department contract.

According to Chief of Police John C. Holland, "The car can go anywhere a man can go, and faster. Let me give you a couple of examples:

"Our seafood district is a maze of oyster shell alleys, lanes and half roads. Miles and miles of them: some no more than six feet wide. With the car we can make four swings through this complicated area in the time it takes a foot patrolman to make his rounds only once.

"Then there's the time-consuming task of parking-meter patrol. Our business district has more than two miles of meters. Until we got the little car, meter checking was the part-time job of two men. Now a complete patrol is ten minutes work for only one."

Boston's 16-Foot Fireboats

Two fire launches are the latest additions to the fire-fighting equipment of Boston's Fire Department.

Their hulls are built of ¾-inch marine plywood, adequately stayed and braced to withstand the rigorous service for which the craft is designed. Over-all length is 16.5 feet, beam 6.5 feet. The draft, with full complement aboard, is 22 inches, with a freeboard of 27 inches.

Each craft is powered with a 70-hp Gray marine inboard engine, which propels the launch and drives the 300-gpm Fairbanks-Morse centrifugal fire pump. The pump, through draft, provides the water supply to a bow-mounted deck gun using a ⅝-inch tip which discharges 100 gallons per minute at 80 pounds pressure. In addition, the pump will also supply two 1½-inch lines of 100 gpm each. Total flow at full capacity is approximately 300 gpm.

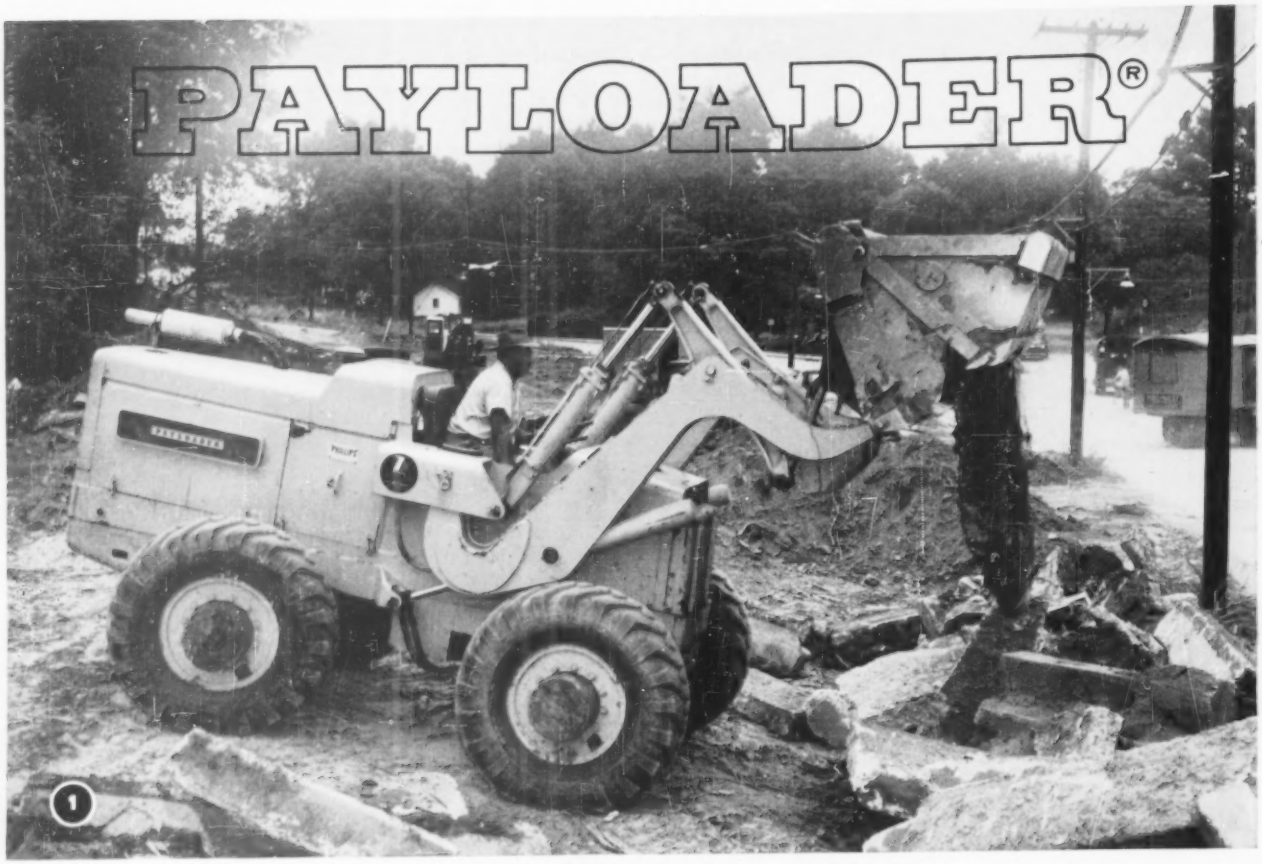
On July 30, 1959, Fireboat Engine 31's launch was on a trial run in mid-channel off Lewis Wharf. The attention of Engineer Kelleher and Fire Fighter Byrne, who were operating the craft, was attracted to a swimmer in distress in the channel. Although the operation of the launch was still new to these men, they maneuvered the craft and saved his life.

The value of these small fire boats in waterfront fires was ably demonstrated during a spectacular four-alarm fire involving a large shed opposite the "L" Street Bridge in South Boston, about noon on August 3, 1959, before the launches had finished their trial runs and tests. They were used for patrol, observations, and size-up purposes, and then ably assisted the large fire boats in actual fire-fighting operations. Constant communication between the fire boat and the launches is provided by portable radio equipment.

These launches were designed by the John Alden Company, an old established firm of marine architects. Specifications of the Boston Fire Department were embodied in the plans. The units were constructed by the New England Marina Company which is located in the Neponset section of Boston.

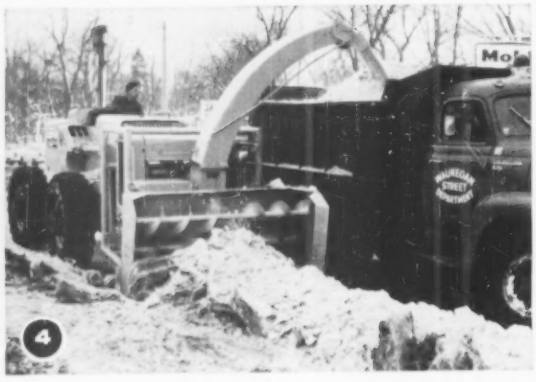
TIMOTHY J. O'CONNOR
Fire Commissioner

It can save lives and fight fire beneath piers.


PAYLOADER®
1

HOUGH
2

3


4

5

MORE THAN A TRACTOR SHOVEL

No other tractor-shovel comes close to matching the all-around usefulness of a 4-wheel-drive "PAYLOADER" because it has the most complete selection of interchangeable attachments available, including several that are "exclusives" on "PAYLOADER" machines! These are *real working tools* that save time on-the-job and the high cost of single purpose machines:

1 "FOUR-IN-ONE" BUCKET

Patented Drott bucket is a "PAYLOADER" exclusive on rubber. Does many shovel, clamshell, scraper and bulldozer jobs.

2 HYDRAULIC BACK-HOE

Built exclusively for "PAYLOADER" by Wain-Roy. 190° working radius permits right angle dig and dump. Mounts front or rear.

3 FORK-LIFT

Forks adjust to fit varied size pallets or loose loads of lumber, sheeting, pipe, logs. Easily interchangeable with bucket.

4 ROTARY SNOW PLOW

Built by Ram for "PAYLOADER" tractor-shovels. Separate power unit drive. "V" and blade plows available also.

5 LEAF LOADER

Another "PAYLOADER" exclusive by Ram. Individual hydraulic motors power reel and conveyors. Picks-up 90% of bulk.

6 VIBRATORY COMPACTOR

Jackson vibrators efficiently develop specified densities in all granular soils. Electric motors on each of four 30-in shoes.

7 BLACKTOP SPREADER

Exclusive Ram unit has separate power unit. Lays up to 8-ft. wide, adjusts 0 to 48-in., 0 to 6-in. deep. 2-cu. yd. hopper.

8 SIDE-BOOM

Superior-Hough hydraulic boom lifts 5-tons, telescopes 10 to 16-ft. Does not interfere with bucket use.

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1-8-3

Award Established For City Betterment

Businessmen received a challenge from Ward Melville to assume the leadership in restoring the economic, cultural and aesthetic values of the nation's communities.

He and his wife have set an example by spearheading the restoration of their own home town of Stony Brook, L. I., to bring back the charm of the colonial village, and to make it a center of tourism, trade and culture.

To encourage businessmen and others to attack the same problem, Mr. Melville announced the Ward Melville Medal for Community Improvement, to be awarded for the first time in 1960 to the city, town or village judged to have done the most outstanding job of making residents "proud of the place in which they live," a quotation attributed to Lincoln. The gold medal, he said, will go to communities and certificates will be awarded to those individuals, laymen and professionals, who assume leadership and make notable contributions. Other communities will receive Certificates of Outstanding Accomplishment for their achievements.

Radio Program Boosts Community Interest

Morris Lipp, city manager of Miami Beach, Fla., (left), and L. G. Miller, president of the Mercantile National Bank of Miami Beach, chat before a tape-recording session. The city manager is one of several municipal officials who have appeared on Mercantile's "Community Capsules" radio program. The bank sponsors the program as a public service, inviting civic leaders to make three-minute talks on various subjects of community interest.

Air Pollution Control Notes

Smog Causes Power Failure

A recent power failure in a plant of the South Carolina Electric and Gas Company in Charleston has been attributed to an attack of acid-laden smog. The failure threw the city and two suburbs into an electrical blackout. Officials of the utility company said the failure occurred when four large copper bus bars were burned out. It is claimed that smog, filled with acid from industrial plants near the power station, coated insulators protecting the bus bars. The massive short-circuit was visible and audible in many areas and for a time it was rumored that the power station was on fire.

Auto Exhaust Dangers

Auto exhausts pose "unusual risks" for three groups of people, according to Dr. John R. Goldsmith and Dr. Lewis H. Rogers. They are: sick and frail persons, especially those with weak hearts, poor blood circulation to the brain or impaired lungs; garage workers or others regularly exposed to automotive fumes in their jobs; smokers who inhale.

Dr. Goldsmith and Dr. Rogers said that chemicals found in automotive fumes can produce a sort of anemia by knocking out some of the oxygen-carrying substances in the blood. They say carbon monoxide also gets into the blood if tobacco smoke is inhaled. Dr. Goldsmith is studying health effects of air pollution for the California State Department of Public Health and Dr. Rogers, now with a New Jersey laboratory, formerly was a chemist for the Air Pollution Foundation in San Marino, Calif. Their findings appeared in a recent report published by the U. S. Public Health Service.

Appointed Health Commissioner

Dr. Roscoe P. Kandle, former Deputy Commissioner of the New York City Department of Health, has assumed his new duties as New Jersey State Commissioner of Health, succeeding Dr. Daniel Bergsma, who has become associate medical director of the National Foundation. As Commissioner, Dr. Kandle will be a member of the New Jersey Air Pollution Control Commission and head of the state's Air Sanitation Program, which is directed by the Department of Health.

Diamond Jubilee Conference

The National Society for Clean Air held the Diamond Jubilee International Clean Air Conference and Exhibition in London, England, October 20th to 23rd. The purpose of the event was to exchange information and promote international cooperation on the practical aspects of the prevention and control of air pollution. The conference marked the 60th anniversary of the society, which, as the Coal Smoke Abatement Society, was established in London in 1899 and is the pioneer association for clean air.

Apartment House Incinerator Study

The New York City Department of Air Pollution Control and the Research Division of the College of Engineering of New York University are nearing completion of a three-year study of apartment house flue-fed incinerators, under a $75,000 grant from the United States Public Health Service. In a recent report, the Department and the University stated that emissions of smoke, charred particles and fly ash can be reduced from 50 to 90% by adding gas burners and air jets, to improve combustion, or by using a wet scrubber, a device that forces the incinerator gases through water and washes them before they are released to the atmosphere. By improving combustion, invisible noxious gases are reduced 70%.

Winnipeg's three new 1250-gpm, triple-combination Mack pumpers and its new aerial, featuring a 100-foot ladder mounted on a chassis that's less than 32 feet long over-all. This latter unit has greater maneuverability, works in more confined areas, requires much shorter station house than conventional ladder trucks. Pumpers feature 500-gallon booster tanks . . . 1½" rear discharge . . . have space for 1500 feet of 2½" hose and 500 of 1½" hose. Apparatus is powered by Mack's 276 hp Thermodyne® engines, delivering 640 ft./lbs. of torque. Cab-forward models of each unit are now on order.

WINNIPEG IS ROLLING WITH MACKS

With the addition of three new Mack triple-combination pumpers and a new Mack-Magirus aerial truck, plus one more cab-forward model of each now on order, Winnipeg has equipment that matches the spirited efficiency of its 535-man department, headed by Chief David Dunnett.

Throughout both Canada and the United States, in fact, large departments and small, volunteer and paid, are unanimous in praise of Mack dependability in the face of every obstacle.

Considering what Mack offers in custom-built apparatus of the finest quality . . . it's short-sighted to settle for anything less. Mack now fields a wide range of cab-forward and standard units . . . offers a choice of engines, standard two-stage pump or the new Uni-Control Hi-Stage pump, air or hydraulic braking systems, and the gear ratios and built-in extras that you need.

Ask Mack to show you how Mack is best equipped to supply the equipment that's *right*—in design and performance both. Mack Fire Apparatus, Allentown, Pennsylvania. In Canada: Mack Trucks of Canada, Ltd., Toronto, Ontario.

MACK
FIRST NAME FOR
FIRE APPARATUS

COMPLETE LINE OF PUMPERS—500 TO 1250 GPM • SQUAD & HOSE WAGONS • AERIALS 65′ TO 144′ • COMBINATION LADDER TRUCKS

for SERVICE

for simplicity...

for economy

HORTON®

tripod

elevated water tank

This functional and completely modern tank is CB&I's practical method of providing economical gravity pressure water supply for small municipalities and private water systems.

Designed and built in accordance with AWWA or standard fire underwriters specifications, the Horton Tripod is furnished to the exacting standards which have made CB&I elevated water storage structures the *municipal preference* for decades. The all-welded structure is smooth and streamlined. It is easy and economical to paint and maintain and does not require elaborate foundations.

Write your nearest CB&I office for details on Horton Tripod tanks.

CBI

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Atlanta • Birmingham • Boston • Chicago • Cleveland • Detroit • Houston • Kansas City (Mo.)
New Orleans • New York • Philadelphia • Pittsburgh • Salt Lake City
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Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY,
GREENVILLE, PA. and at NEW CASTLE, DELAWARE.
In Canada: HORTON STEEL WORKS LTD., TORONTO, ONTARIO

STANDARD SIZES

Horton *Tripod tanks* are built in capacities from 15,000 to 75,000 gallons. Standard heights to bottom range from 25 to 125 feet.

M52C

This crew of four, with one machine, is on call, 24 hours a day, seven days a week, to take care of water mains, hydrants, and service lines in Livonia, Mich.

Our Multi-Use Equipment Pays For Itself

One job alone saved us about two-thirds the cost of our tractor-mounted excavator and, in the first year of service, it has paid for itself several times in direct labor savings. To a fast-growing community faced with many problems, this saving is extremely important.

Livonia not only occupies the second-largest land area of any Michigan municipality—36 square miles—but is also one of the state's fastest-growing communities. Our population increased from 17,500 to more than 60,000 in the last ten years.

Keeping pace with the water-service needs of an additional 1,500 homes, stores and factories each year presents a real challenge to a department that consists, besides the commissioner, of a foreman, three maintenance and repairmen, three meter readers and two meter repairmen.

Maintenance Crew

Foreman Angelo Salvatore and his three-man crew maintain and repair the city's 265 miles of water mains, 1,800 hydrants and some 16,000 feet of service lines. In addition, they lay at least 500 tap lines each year ranging from ¾-inch to 2 inches in diameter and up to 100 feet in length.

One Sherman Major power digger and one Sherman front-end loader mounted on the same Fordson tractor make up our excavating and earth-moving equipment. They replaced a larger tractor equipped only with a dozer blade.

We use this rig not only for ditching and loading, but for pulling, inspecting and repairing hydrants, and for handling various materials used in construction work. Of great importance is its ability to operate in tight spaces.

Last summer we faced the necessity of replacing a section of 12-inch water main spanning the Rouge River. Bids ranged from $7,500 to $15,000 with up to four weeks' time required to complete the work.

Speed and a sensitive touch make Livonia's Sherman digger an indispensible tool.

Our crew did the entire job in two weeks at a cost of only $2,500; a clear saving of $5,000 or approximately two-thirds the price of the machine.

DALLAS F. HAY
Water Commissioner
Livonia, Mich.

a cinch to

"The boys" are back . . .!

by popular demand! And three years' additional experience proves that Tyton Joint pipe has more than lived up to everything they said about it in 1957.

Tyton Joint® pipe is *almost* as easy to install as our hillbilly friend indicates. Only one accessory needed . . . a specially designed rubber gasket that fits into the bell of the receiving pipe. A push or two and the connecting pipe compresses the gasket . . . seals the joint bottle-tight and permanently.

No bell holes. No waiting for weather. Tyton Joint pipe can be laid in rain or wet trench. It's so simple, in fact, even an inexperienced crew quickly becomes expert.

U.S. cast iron PIPE

FOR WATER, SEWERAGE AND

install!

You'll be hearing more about this ingenious new Tyton Joint. Why not get the facts firsthand . . . and now?

Write or call. We'll be glad to give them to you.

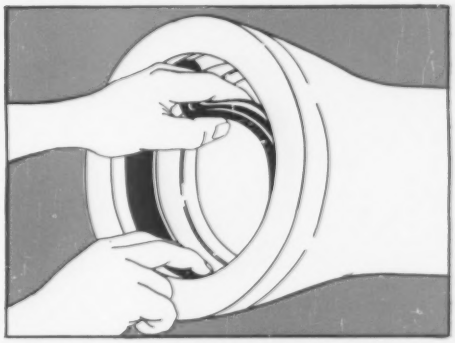
U. S. PIPE AND FOUNDRY COMPANY
General Office: Birmingham 2, Alabama

A WHOLLY INTEGRATED PRODUCER FROM MINES AND BLAST FURNACES TO FINISHED PIPE

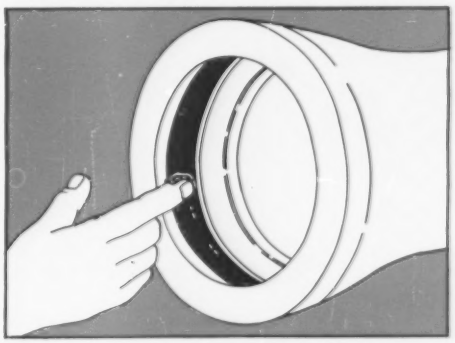
INDUSTRIAL SERVICE CAST IRON®

U. S. TYTON JOINT

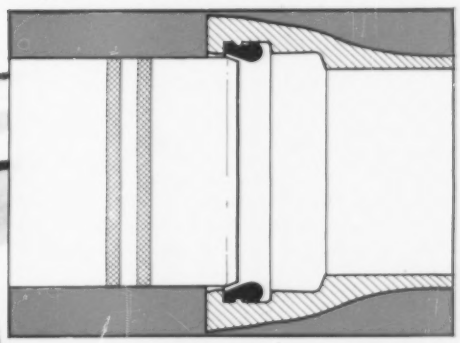
ONLY FOUR SIMPLE ACTIONS



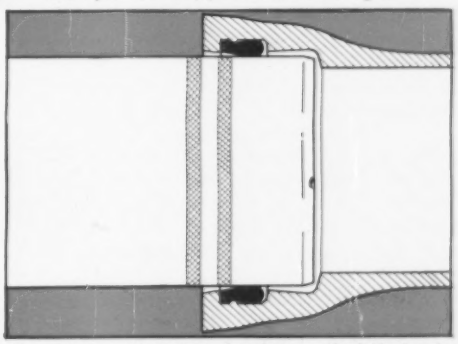
Insert gasket with groove over bead in gasket seat



Wipe a film of special lubricant over inside of gasket



Insert plain end of pipe until it contacts gasket



Force plain end to bottom of socket . . . the job's done!

POSITIVE CONTROL OF *MATERIALS IN MOTION* BIF METERS FEEDERS CONTROLS

PROVEN RELIABILITY IN COST-CUTTING TRANSISTORIZED SUPERVISORY CONTROL!

More and more municipalities with widespread systems are capitalizing on the money-saving advantages of one-man supervisory control.

BIF *Builders-Providence* **Supervisory Control System Provides Performance-Proved Transistorized Audio-Tone Transmission For Cost-Conscious Municipalities!**

Three years of actual field experience prove Builders' transistor-tone to be most advanced, benefit-packed system for centralizing operations of widespread treatment plants:

- power savings . . . up to 95%
- space savings . . . up to 50%
- maintenance savings . . . no tubes to heat up or replace
- increased reliability . . . new circuit design
- longer life . . . transistor life up to 10 times that of tubes
- ease of assembly, interchangeability, installation, and system expansion . . . plug-in components
- interference-free control . . . over a single circuit

B-I-F offers *complete system* responsibility. For the added economies and reliability only fully integrated systems can provide, investigate B-I-F's extensive line of water and sewage works equipment.

B-I-F *Industries*

BUILDERS-PROVIDENCE • PROPORTIONEERS • OMEGA

METERS • FEEDERS • CONTROLS / CONTINUOUS PROCESS ENGINEERING

Request Bulletin 240-P2A for complete Synchro-Scan® data.

Write **B-I-F Industries, Inc., 358 Harris Ave., Providence 1, R. I.**

Space Deodorizers Wipe Out Nauseating Stench

Hundreds of Atlanta residents demanded quick action when excavation workers inadvertently unearthed an old land fill. The stench that arose made front page news and the people kept telephone wires humming with calls to the city and county health departments insisting the odor was almost unbearable.

Effective action came in the form of space deodorizers set up by Aireactor of Dixie, Inc., Atlanta, an associate company of Aireactor Corporation, whose main offices are in New York. The company lost little time in getting to the job, setting up the equipment and keeping it in operation until the problem was over. As a result, workers could go about their duties without interference from an overwhelming odor, and complaints from neighboring residents and passing motorists ceased.

Aireactor space deodorizers, set up at the construction site, put an end to the odors which arose when an old dump was unearthed.

Oklahoma Studies Refuse Practices

The Division of Sanitary Engineering, Oklahoma State Department of Health, recently has completed a study of state-wide municipal refuse-handling.

The Vector Control Section of the division sent questionnaires to 292 Oklahoma cities and towns with 500 or more residents (1950 census). Answers were received from 141, with 88 of these reporting a regular system of refuse handling. The remaining 53 had no programs at all.

The 88 cities can be grouped as follows:

Population	Number	Percent
500 to 5,000	52	59.1
5,000 to 10,000	13	14.8
10,000 to 30,000	17	19.3
30,000 to 60,000	4	4.6
Over 60,000	2	2.3

Less than 50% of these require special types and sizes of containers and most do not require separation of garbage from other refuse.

Of the 88 municipalities performing regular refuse service, 67 provide their own collection and disposal. The rest reported use of contract collection and other methods. There were 58 that reported municipal collection in both business and residential areas. In a few instances, the business area is served by municipal collection and the residential area by contract or vice-versa.

Of those indicating municipal refuse collection, 53 reported daily collection in business areas and 54 reported one or two collections per week in residential areas (32 collect twice—22 collect once).

Of the 67 communities with municipal collections, more than 20% charge a monthly residential rate of $.50. A rate of $1 per month is charged by 34.3%. No charge at all is levied against residents in 16.4% of the cities. Of those remaining, 10.4% made no report and the rest quoted charges ranging from 25c to $2 per month.

Business rates are most often established according to the volume collected, by the size of the establishment, time required or by time plus volume.

The great majority of the cities operate on a fee system of financing. General tax fund support of refuse collection and disposal was reported by only 11.9% of the cities operating their own collection programs. Fees paid directly to the contractor predominate in cities served by private scavengers.

Only one-fifth of the collection-program cities operate their own landfills and only a small portion of these would be classified as *sanitary* landfills.

Per-capita-per-month cost of collection and disposal of refuse for 50 of the reporting communities ranged from a low of 10c to a high of 67c. The average was 27c. Probably the greatest range in operational costs was reported in the cost of collection and disposal of one ton of refuse. For 36 communities that reported, disposal of each ton ranged from a low of $1.19 to a high of $16.50. The overall average cost of disposal was $5.56 per ton of material.

The study established that a two-man crew providing alley or curb pick-up service should collect from about 1,200 residences per 40-hour week or 1,320 residences per 44-hour week. A similar schedule should be maintained in backyard pickup by adding one man to the two-man crew.

LeRoy K. Rachels, *Entomologist*
Division of Sanitary Engineering
Oklahoma State Dept. of Health

FREE CATALOGS

These Catalogs Will Help You

By checking over these listings you can secure without charge important up-to-date information on many of the problems which may be troubling your city.

Write directly to the address given or use the Post Card on page 51.

Cuts Down on Paper Work, Speeds Office Routine

225 Busy city officials — mayor, city manager, clerk of court, police or fire chief—can reduce paperwork, increase accuracy, cut down on backlogs and have more time for public service with a Voicewriter on the job. For full facts on this dictating instrument, or for a free tryout, write EDISON VOICE-WRITER, WEST ORANGE, N. J. Also ask for literature on a 3-pound, battery-operated tape recorder.

Drilling and Boring Tools

226 If your work involves angular, horizontal or vertical drilling, you'll want to obtain free data on the Ka-Mo line of drilling and boring equipment which offers drills from 2 to 48-inch diameter, and larger; sectionalized lengths; air, hydraulic, electric, gasoline or diesel-powered. Write KWIK-MIX CO., KA-MO TOOLS DEPT., PORT WASHINGTON, WIS.

Weather-Duty Mercury Lamps

227 Whether used for street or parking lot lighting, these mercury lamps are economical. "Lifeguard" arc tubes maintain high initial light output longer; make possible lower-cost new lighting installations, and require less frequent lamp changing. "Weather-Duty" bulb construction resists thermal shock, moisture and industrial fumes. For full facts, write WESTINGHOUSE LAMP DIVISION, BLOOMFIELD, N. J.

Concrete Saws and Blades

228 A new, 4-color brochure released by EVEREADY BRIKSAW CO., DEPT. 502, 1104 UNION AVE., KANSAS CITY 1, MO., points out many uses for concrete saws, suggests horsepower models for various applications, and notes special features of Eveready saws.

For Lower Refuse Collection Costs

229 Detailed descriptive literature on the Roto Pac containerization system of refuse collection, designed to reduce collection costs while making operations more efficient, neater, faster and more sanitary, can be obtained from ROTO PAC CONTAINERIZATION, CITY TANK CORP., CORONA 68, N. Y.

Emergency Light Guidebook

230 Over 100 powerful, dependable and durable warning, vehicle, panic and hand lights are illustrated and described in this complete line emergency light catalog, offered by CARPENTER MFG. CO., 619 BRADLEY ST., SOMERVILLE 45, MASS.

Engine Generators Produce High Power-to-Fuel Ratio

231 These units are part of a complete line of diesel, dual-fuel and gas engines that range from 190 hp to 2150 hp, or 150 kw to 1500 kw. They have proved their low maintenance operation in innumerable municipal installations. For their full story, write WHITE DIESEL ENGINE DIVISION, THE WHITE MOTOR CO., SPRINGFIELD, OHIO.

High-Frequency FM Radio Monitoring Receiver

232 This receiver is crystal-controlled and fully transformer-powered and features long-range reception, excellent sensitivity, and low cost. It is designed for use by any city official, fire or police chief who wants to listen to the two-way radio messages from his radio-equipped vehicles. For full facts, write PLECTRON CORP., DEPT. ACM-1, OVERTON, NEB.

Every Municipal Vehicle Supervised

233 *Bulletin* SU-3E devotes 12 pages to the Tachograph, a precision instrument that records vehicle speed in mph, or engine rpm, distance traveled, or total revolutions, running, idling or stopping of engine. It is used to determine whether or not vehicles are operated at their maximum efficiency. For a copy, write WAGNER ELECTRIC CORP., 6400 PLYMOUTH AVE., ST. LOUIS 14, MO.

Keys Strayed? Stolen? Mixed-Up?

234 Then you'll be interested in a type of key control that insures against property loss, saves time spent searching for misplaced keys, eliminates eventual re-locking expenses. "The Key to the Whole Thing" describes the Telkee System—from 21 to 2240 key capacities to fit your needs. Write P. O. MOORE, INC., GLEN RIDDLE 27, PA.

Assures Free-Flowing Sewer Lines

235 A simple maintenance expedient that will keep sewer lines open is described in new literature from ZEP MANUFACTURING CORP., 1310 SEABOARD INDUSTRIAL BLVD., ATLANTA, GA. It is called Zep Sewer Aid and can be used in emergencies, as well as preventively, to quickly clear sewers of any alkali-soluble obstruction. It is harmless to sewer pipe itself.

Submersible Sewage Ejector for Residential Installation

236 This quiet-operating pump permits the installation of basement toilets and other fixtures where waste must be pumped up to outside sewer lines. An automatic control provides proper pumping cycle without adjustment; a non-clog impeller handles solids up to 1½" diameter. Capacity is 75 gpm at 15' head; 50 gpm at 20' head. *Bulletin* SE 850 gives full facts; write THE WEIL PUMP CO., 1530 N. FREMONT ST., CHICAGO 22, ILL.

Convert Incandescent to Mercury Lamps in Less than 9 Minutes

237 The new Sylvania Mercury Conversion Kit permits you to change existing heads to mercury in one easy operation. The kit is designed for EEI-NEMA-type heads; ballast is built right into the kit. Reactor is also offered separately for adaptation for other in-head ballast assemblies. For technical details, request descriptive literature from SYLVANIA LIGHTING PRODUCTS, a division of SYLVANIA ELECTRIC PRODUCTS INC., IPSWICH, MASS.

To Solve Municipal Garbage-Rubbish Disposal Problems

238 *Bulletin* No. MR-110, entitled "How to Turn a Liability Into a Profit" describes processing equipment for the conversion of rubbish, raw garbage and refuse into humus and organic fertilizer and for sanitary compaction in land fills. For a copy, write GRUENDLER CRUSHER & PULVERIZER CO., DEPT. ACM-1259, 2915 N. MARKET ST., ST. LOUIS 6, MO.

How to Boost Water Yield from Well Supplies

239 Cementing, fracturing and acidizing, hydro-sonic redevelopment, formation testing, and a wide variety of field-tested, proven tools and materials are offered by a leader in well techniques and equipment to help make your water well a profitable producer. For details, write HALLIBURTON OIL WELL CEMENTING CO., DUNCAN, OKLA.

Cold Mix Bituminous Paving Material

240 Street construction and maintenance men will be particularly interested in Gilsapave, which makes possible a dense, graded cold mix that is initially stable in cold weather and finally stable in hot weather. It can be mixed and applied by conventional methods. For literature, write GEORGE M. JONES CO., 1134 E. 4620 SOUTH, SALT LAKE CITY 17, UTAH.

More Street Lights for Less Money

241 Street light luminaires equipped with Holophane refractors concentrate more light on the pavement. There are various Holophane refractors, each designed for a special street lighting use. The cost of refractor is small compared with the continuing economy from placing on the street the most light per dollar. If interested in street lighting effectiveness, write HOLOPHANE CO. INC., STREET LIGHTING DEPT., NEWARK, OHIO.

Help Keep Your City Clean

242 You can by placing Demcor litter baskets at bus stops, alleyways, in parks, along main traffic avenues, and in other public areas where their very presence will invite use. Rugged, low cost and weatherproof, these metal units are built to last. For descriptive literature, write DESIGNERS METAL CORP., 662 HOFFMAN ST., HAMMOND, IND.

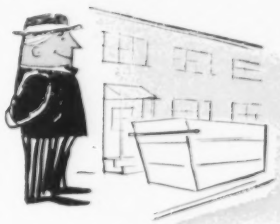
Test Concrete Pavement

243 Engineers and others responsible for taking test samples of concrete pavement will be interested in the Mobile Mark V, a pavement coring device that can drill 1 inch every 30 seconds in steel-reinforced concrete. For literature, write MOBILE DRILLING, INC., DEPT. 12, 960 N. PENNSYLVANIA ST., INDIANAPOLIS, IND.

(See page 40 for more Bulletins)

The Tale of the Commissioner's Crew...

In common with many sanitation commissioners, Commissioner Gregg was concerned over the problem of refuse collection, particularly the new city housing projects. He looked into containerization.

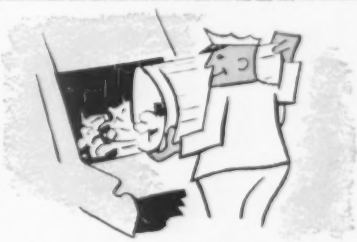


One of his first steps was to arrange for a Roto Pac demonstration. He was impressed. Roto Pac containerization is ideal for housing developments, institutions and commercial areas.

The reports from his crews were excellent: "Very simple to operate," "much less tiring for the operators," "fastest, easiest unit we've ever seen."

He could see for himself how much neater the Roto Pac containers were than the old accumulations of trash cans... rodent-proof, fire-proof and so much easier to keep neat too.

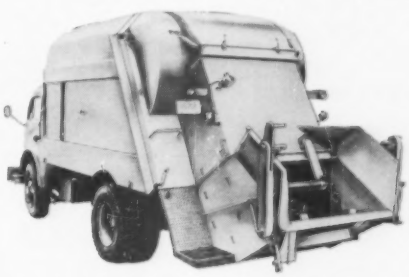
He found the Roto Pac to be the most efficient unit he'd ever seen. Because of its automatic continuous compaction, his crews lost no time waiting for batches to be compacted.



Of course, as Commissioner Gregg also learned, Roto Pac is the only collection truck on the market that can pick up manually dumped refuse on the same route as containers—all size containers—even the big 6 yard job.

More and More Cities find the ROTO PAC Container System means Lower Refuse Collection Costs

THE ROTO PAC CONTAINER Sturdy, neat, sanitary, and with the Roto Pac on-the-job disinfecting method, it stays that way. With six sizes to choose from, you can meet the requirements for any route. 1 to 6 yards.



THE ROTO PAC COLLECTION UNIT... the only unit on the market that provides *automatic continuous compaction.* The time it saves at each stop adds up to one extra full load per truck per day. That's efficiency! New or old Roto Pac units can be adapted at very modest cost for containerization.

For complete information on how the Roto Pac containerization system can cut your refuse collection costs, mail this coupon today.

Roto Pac Containerization
City Tank Corp.
Corona 68, N. Y.

Please send literature on Roto Pac container system and have your representative contact us for a demonstration.

NAME .....

TITLE .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

GIANT for its size

Giant for work, speed-king for set-up and reading, ingenious for ease of operation...and as tough as they come for rugged field conditions.

In surprising and welcome contrast to full size performance is its neat, compact size: just 4½ x 6" overall.

With tilting screw and prismatic tubular level, at a price much lower than you would expect, the Wild N-10 deserves your consideration.

Write for Booklet N-10

N-10 SURVEYOR'S LEVEL

Full Factory Services

WILD HEERBRUGG INSTRUMENTS, INC.

MAIN AT COVERT STREET,
PORT WASHINGTON • NEW YORK
PORT WASHINGTON 7-4843

YOU NEED *These catalogs*

Write directly to the address given or use the Post Card on page 51.

Seal, Cure, Harden Wet Concrete— in One Treatment

244 Tri-Kote concrete treatments — based on Parlon chlorinated rubber —provide moisture retention of 95-98%; give rainfall protection within ½ hour; stop spalling, flaking, dusting; repel oils, grease, salts; take paint readily. For full story on Tri-Kote, write W. F. MACKLIN CO., INC., 336 TAFT ST., NE., MINNEAPOLIS 13, MINN.; for facts on Parlon, HERCULES POWDER CO., 900 MARKET ST., WILMINGTON 99, DEL.

New Butterfly Valve

245 *Bulletin* 10HP illustrates and describes the new Monoflange Mark II rubber seat butterfly valve. Designed as a working tool for engineers and users of this type of equipment, it gives complete specifications, certified dimensions, drawings, water flow data, gas flow data, weights. For a copy, write HENRY PRATT CO., 319 W. VAN BUREN ST., CHICAGO 7, ILL.—ATTENTION ADVERTISING MGR.

Your 'Garbage-Free' Community

246 This 8-page booklet, issued by IN-SINK-ERATOR MFG. CO., RACINE, WIS., (1) poses garbage disposers and the "garbage-free" community plan as the most logical method for the elimination of garbage; (2) includes comments by officials of cities employing the garbage-free community plan; (3) presents excerpts from ordinances of cities using the plan.

Power Take-Off for Trucks, Tractors

247 The Spicer power take-off units can add usefulness to your trucks and tractors, limited only by your ingenuity. Power take-offs and PTO joints are only two of the products in the Spicer line of equipment designed to serve your fleet of trucks and tractors. For full facts on these and others, write DANA CORPORATION, DEPT. 86, TOLEDO 1, OHIO.

Substation Enclosures

248 A new development for screening power substations or distributing plants located in residential areas is being offered by HI-VOLTAGE EQUIPMENT CO., DIVISION OF JOSLYN MFG. & SUPPLY CO., 4000 E. 16TH ST., CLEVELAND 5, OHIO. The enclosures are decorative, available in several styles to blend with the character of the area, and are of modular construction.

Dependable Air Control Valves Help Water Lines

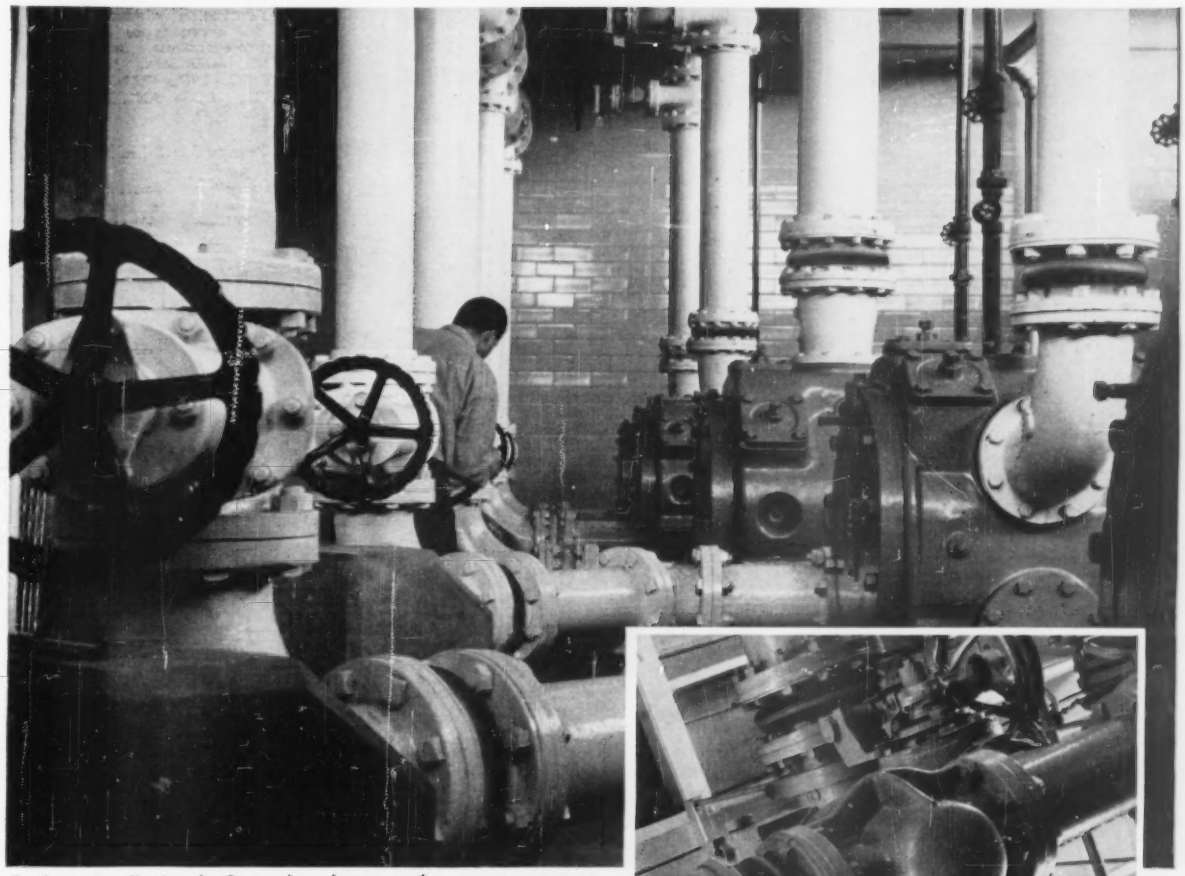
249 By writing to MULTIPLEX MFG. CO., DEPT. E, BERWICK, PA., you can obtain up-to-date literature on several models of Crispin air control valves, designed to keep long water lines open for safe, efficient, economical operation.

Electric Power— When and Where Needed

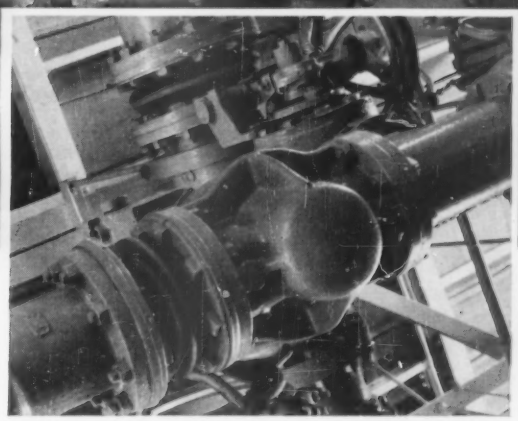
250 These portable and standby electric power plants (1500 to 10,000 watts) are equipped with an Automatic Conserv-er idling control that saves up to 60% in fuel costs. For complete facts, request the WINCO full line catalog; write WINCHARGER CORP., DEPT. AC129, SIOUX CITY 2, IOWA.

(See page 42 for more Bulletins)

US RUBBER EXPANSION JOINTS



Employee is adjusting the flow valve; shown are the vacuum pumps on which 6" and 10" expansion joints are installed.



Close-up of the 6" joint in the sludge heat building, with the 10" joint in the immediate background.

655 is a lot of joints

. . . "U.S." EXPANSION JOINTS THAT IS!

655 Expansion Joints are installed in the new Mill Creek Sewage Works of Cincinnati, Ohio.

Mill Creek, largest of the three completed sewage plants in the city, is one of five plants that will treat 120 million gallons of sewage per day.

A "U.S." Expansion Joint is placed between the sewage pump and a long run of cast iron pipe—a total of 1639 tons—to stop vibration and to take the weight off the pump itself. The "U.S." Joint assures expansion or contraction of the long pipe. U.S. Rubber Expansion Joints are used exclusively—to the total of 655. Any breakdown of pump or pipeline would bring plant operation to a halt. "U.S." Expansion Joints have proved their reliability since they were invented by U.S. Rubber. Hundreds of these joints — on the job *30 years and more* in many industries—continue to prove their durability and reliability.

• • •

When you think of rubber, think of your "U.S." Distributor. He is your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

US RUBBER

Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

FREE catalogs

Write directly to the address given or use the Post Card on page 51.

Speed, Lower the Cost of Refuse Collection

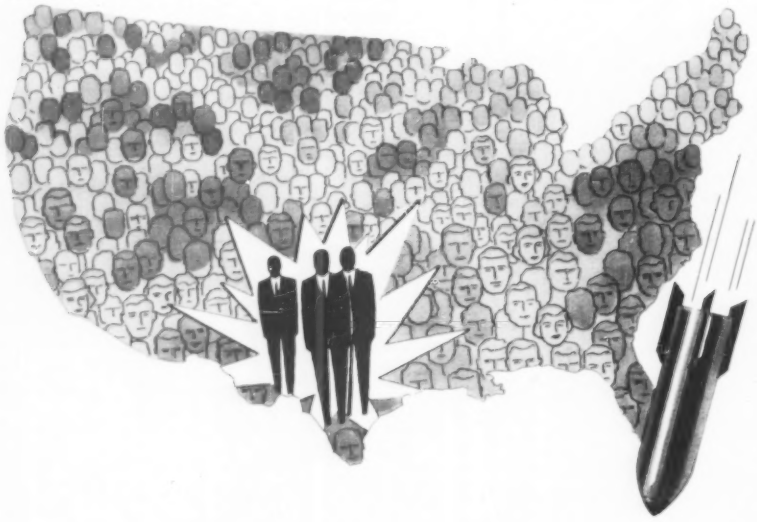
251 If you want to put municipal refuse collection on an efficient basis, cover more routes in less time, make fewer trips to the disposal site, use less labor all around, then you'll want to write for a free copy of "The Big Squeeze." It is available from HYDRO E-Z PACK, DIVISION OF HERCULES GALION PRODUCTS, INC., GALION, OHIO.

Brush Disposal Made Easy

252 If you are interested in a chipper that chips more brush faster at less cost, reduces hauling costs 75%, eliminates brush burning, and provides a useful, valuable by-product, write ASPLUNDH CHIPPER CO., 505 YORK RD., JENKINTOWN, PA.

File System for Blueprints, Drawings

253 The Staktube steel roll file puts valuable blueprints and engineering drawings at your finger tips and fully protects them. Files come complete with tubes, in 8 lengths, 24 sizes, have index record of contents on the inside of door and label holder on outside. Catalog literature is available from STACOR EQUIPMENT CO., 329 EMMET ST., NEWARK 5, N. J.



THE POPULATION BOMB

Economists and scientists refer to a rapid increase in the number of people as a "population explosion." U. S. population today is estimated at around 175 million and is increasing at the rate of about 7,500 each day—a new citizen every 12 seconds. Census experts expect U. S. population will be 250 million by the 1980's.

The basis of increased water use is an increase in consumers plus greater consumption per capita. U. S. is experiencing both. Total water use in the U. S. in 1900 was about 35 billion gpd. By 1950 it had increased to 200 billion, in 1959 it is 300 billion, and by 1975 it is expected to be well over 400 billion gpd.

A local water problem may involve insufficient quantity, poor quality and inadequate distribution. Federal, state and local officials and your water works superintendent know what to do. But they cannot do it without wholehearted public support.

This series is an attempt to put into words some appreciation of the water works men of the United States.

M&H VALVE AND FITTINGS COMPANY
ANNISTON, ALABAMA
SUBSIDIARY OF WALWORTH

Plastic Pipe Handbook

254 This 36-page handbook for engineers contains pertinent and detailed information on the use of Krayloy PVC plastic pipe, fittings and valves. Specifications, design and installation information is included, as is a comprehensive corrosion resistance comparison chart for seven types of plastic pipe carrying 162 chemicals. For a copy, write RUSSELL JOHNSON, KRAYLOY PLASTIC PIPE CO., INC., 4720 E. WASHINGTON BLVD., LOS ANGELES 22, CALIF.

Submergible Pumps for 3-Inch Wells

255 *Bulletin* R-685 describes the two new submergible pumps for 3" wells recently introduced by REDA PUMP CO., BARTLESVILLE, OKLA. The X-4 provides capacity to over 400 gph; the X-7, to over 600 gph. Both units are ½-hp, 115-volt, single-phase models.

To Make a Pump Do Double Duty

256 The Johnson Right Angle Gear Drive eliminates the need for a second pump for emergency service by providing a means for two independent power sources to drive a single pump. Either power unit may be disconnected for repairs without taking the pump out of service. For more money-saving ideas on the use of the right angle drive, write JOHNSON GEAR & MANUFACTURING CO., STH and PARKER STS., BERKELEY 10, CALIF.

Fasten Traffic Buttons and Curb Markers

257 . . . to pavement permanently and without conventional, time-consuming troublesome steel doweling. The California State Highway Department does by using a concrete adhesive that forms a bond that's stronger than concrete itself and successfully meets the challenge of time, temperature and wear. For facts and full story on its use for other highway applications, write DEPT. 53, THIOKOL CHEMICAL CORP., 780 N. CLINTON AVE., TRENTON, N. J.

Smallest 2-Way Mobile Radio Has "Drainless" Battery

258 A transistorized 2-way radio that transmits up to 75 watts in high band uses only 0.04 ampere on standby, fits under the dash, uses no more than 4 tubes, and boasts one-piece design of receiver control and transmitter. It is offered by GENERAL ELECTRIC CO., COMMUNICATION PRODUCTS DEPT., 11259, MOUNTAIN VIEW RD., LYNCHBURG, VA.

Asphalt Construction and Maintenance Equipment

259 If this is your bailiwick, you'll want to familiarize yourself with the complement of equipment manufactured by W. E. GRACE MFG. CO., 6009 S. LAMAR ST., DALLAS 15, TEXAS. It includes trailer and truck-mounted asphalt distributors, towed and self-propelled rollers, street sweepers (tractor-driven, towed engine-driven, front tractor-mounted), asphalt heaters, etc.

Voting Machine Film

260 Voting machines simplify the election commission's task, assure accuracy, speed the actual voting procedure. A new 18-minute, 16mm color film illustrates potential benefits of an Automatic voting machine to a community. It is available to service clubs, municipal departments and other interested organizations. For reservations, write AUTOMATIC VOTING MACHINE, DIV. OF ROCKWELL MFG. CO., JAMESTOWN, N. Y.

(See page 46 for more Bulletins)

REPORTS *on concrete bonding with THIOKOL LP/Epoxy compounds*

#4 FASTENING TRAFFIC BUTTONS AND CURB MARKERS . . . *for good and without mechanical means*

The California State Highway Department discovered it . . . a combination of THIOKOL polysulfide liquid polymer and epoxy resin produces a concrete-to-concrete bond *that's stronger than concrete itself.*

In an experimental application, traffic buttons were fastened to pavement using the adhesive alone—substituting for the conventional, time-consuming and troublesome method of steel doweling. The experiment took place at a highway point averaging 30,000 vehicles a day. Although the installation was made six years ago, the buttons are still completely intact and in service. The test was repeated in areas where traffic is still greater. Of the thousands upon thousands upon thousands of buttons installed this quick, easy way, failures of less than 1/10th per cent have been noted.

The same THIOKOL LP/Epoxy concrete adhesive has since successfully met the challenges of time, temperature and wear on other highway applications—in repairing spalled and scaled areas, broken slabs and cracks, in securing cement overlays, in skidproofing and sealing. To get the full story, mail the coupon.

Thiokol®

CHEMICAL CORPORATION

780 NORTH CLINTON AVENUE • TRENTON 7, NEW JERSEY

In Canada: Naugatuck Chemicals Division, Dominion Rubber Co., Elmira, Ontario

®Registered trademark of the Thiokol Chemical Corporation for its liquid polymers, rocket propellants, plasticizers and other chemical products.

FOR MORE INFORMATION: Mail coupon to Dept. 53, Thiokol Chemical Corp., 780 N. Clinton Ave., Trenton, N. J.

Gentlemen: Please send me available data on THIOKOL LP/Epoxy adhesives for highway use.

Firm_____

Street_____

City_____ State_____

Your Name_____

IF YOUR DECISION MUST STAND UP FOR 100 YEARS

If your decision today will in some way determine your town's water supply system for the next century, consider the case for cast iron pipe:

- Cast iron pipe is built to *last*—96 American cities will testify to that. They've had cast iron pipe installations in constant use for over a century! And in Versailles, France, they're still using cast iron pipe water mains that were laid in 1664! Solid proof that once cast iron pipe is in the ground, it stays there!
- Cast iron pipe rarely requires repair. Its rugged construction, corrosion-resistant qualities and bottle-tight, rubber-ring joints will withstand the most severe pressures. Once an investment is made in cast iron pipe, it is usually your first and last cost because of the absence of maintenance or repairs.

Don't be fooled by initial pipe costs. You can't save money on "low-cost" pipe if you have to repair and replace it frequently. Insist on the pipe that will actually save you money over a period of years—cast iron pipe!

Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 3440 Prudential Plaza, Chicago 1, Illinois

Rely on

CAST IRON PIPE

THE MARK OF THE 100-YEAR PIPE

You name the place

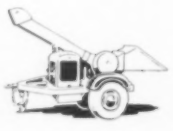
. . . and *without obligation to you*, a qualified representative will arrange a prompt demonstration of the fastest, most economical chipper in the world.

Then you can see for yourself how aggressive is the new power unit of ASPLUNDH CHIPPERS; how it hungers for great loads of bulky brush; how easily it consumes limbs of 6″ diameter.

And remember, the efficiency and economy of the completely safe, simply designed ASPLUNDH CHIPPER has been *proven in service* by the largest tree company in the world.

You will see, in demonstration, that an ASPLUNDH CHIPPER is, by far, the best buy in chippers on the market today.

WRITE TODAY for FREE illustrated folder and for a demonstration.



ASPLUNDH CHIPPER COMPANY
505 York Road, Jenkintown, Pa.
By Actual Test the Fastest Chipper Made

MONEY SAVING *catalogs*

Write directly to the address given or use the Post Card on page 51.

Dependable Fire Apparatus

261 Whether your fire department is large or small, volunteer or paid, it will be interested in finding out what's new in custom-built Mack fire apparatus. For full facts, write MACK FIRE APPARATUS, ALLENTOWN, PA.

Keep Construction Crews Busy in Winter

262 A 16-page bulletin on metal forms and machinery for concrete specialty products illustrates numerous items for city use that can be precast by work crews indoors, during winter and inclement weather. They include parking blocks for cars and bikes, grandstands, swimming pool copings, picnic tables and benches, street and right-of-way markers. For a copy, write R. L. SPILLMAN, BOX 534, STATION G, COLUMBUS 7, OHIO.

Precise Measuring Wheel

263 Engineers will appreciate this wheel that accurately measures any distance at walking speed and records 100,000 feet automatically, shows inches and fractions of an inch and tenths of a foot, and keeps accumulated totals always in full view. For full facts, write ROLATAPE, INC., 1741 14TH ST., SANTA MONICA 2, CALIF.

Municipal Castings

264 *Bulletin* M 11 catalogs a wide variety of municipal castings, available in every size, style and shape. So if you are interested in valve, service and roadway boxes, meter boxes, manhole rings and covers or other municipal castings, write DEPT. J, BOX 55—STATION B DE 6764, BUFFALO PIPE & FOUNDRY CORP., BUFFALO 7, N. Y.

For Dependable Sewage Aeration

265 The four centrifugal blowers installed in the addition to the sewage treatment plant of Washington, D. C. to supply air for sewage aeration have a total capacity of 160,000 cfm, sufficient to supply 0.8 cubic feet per gallon of sewage. Descriptive literature discusses similar equipment and points out the many features that assure their reliability. Write COOPER BESSEMER, MOUNT VERNON, OHIO.

Snow Removal a Problem?

266 Then you'll want to review current literature on a complete line of rugged, dependable snow plows, designed to do the job faster, safer and at lower cost. Four basic types of plow are described, each with models to fit 1½ to 12-ton trucks. Write FRINK SNOPLOWS, INC., CLAYTON, N. Y.

For More Economical Refuse Collection

267 Econ-O-Packer refuse collection bodies with front-end loaders handle up to 40 cubic yards of compacted trash and are engineered for comparatively short wheelbase truck chassis. Great compaction means less dump-travel time and more actual pick-up time. With Econ-O-Bin detachable containers refuse collection is a one-man operation. Write ECON-O-WAY INC., 2675 COMMERCIAL ST., SAN DIEGO 13, CALIF.

(See page 50 for more Bulletins)

fast installation in existing piping!

MUELLER® COPPER METER YOKES

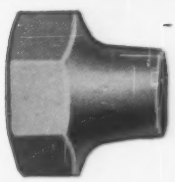
NEW!

Compression Coupling with locking nut for steel pipe (Regular nut available)

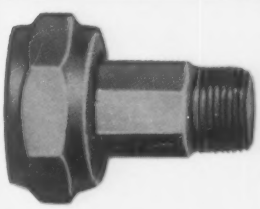
NEW!

Compression Coupling with locking nut for copper pipe (Regular nut available)

Combination Tailpiece with inside I.P. Thread for steel pipe and flared connection for copper pipe.



Body Coupling Nut for copper pipe.



Tailpiece with outside I.P. Thread.

Now, Compression Couplings are available for Mueller Copper Meter Yokes with Multi-purpose Ends.

These new, time-saving couplings can be quickly installed in any existing piping without cutting threads or sweating joints. Simply cut a short section from the pipe, slip the compression couplings over the ends of the pipe, assemble the yoke to the couplings and tighten the compression coupling nuts.

Compression couplings can be furnished for steel pipe or copper pipe in both the regular compression nut design or the locking nut designs shown. The locking nut type positively prevents any movement of the yoke on the pipe and insures continuous electrical bonding of the service line.

The addition of these four new end couplings greatly increases the versatility of Mueller's proven Multi-purpose End Connections.

Write for complete information and specifications.

This simplified system of installing copper meter yokes is a typical result of the constant attention to detail and more than a century of experience in research, design, engineering and manufacturing that is an integral part of all Mueller fittings and equipment.

Copper Meter Yokes are just a portion of Mueller's complete system of quality-matched water distribution products.

MUELLER CO. Since 1857 SERVING the Water and Gas Industries QUALITY

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited; Sarnia, Ontario

"Look...the Steering Levers are Gone!"

now you STEER, STOP, and REVERSE
with the NEW JOHN DEERE

PILOT touch

the only Single Stick crawler control

Ease the stick forward, back, left or right—the way you want to go—and the John Deere Crawler obeys! Clutching is automatic—braking, too—so no footwork is required.

One-hand driving with hydraulic-powered Pilot-Touch keeps the operator fresh and alert—frees a hand for full-time control of loader, dozer, or other equipment. Payoff—a better job, and higher daily work production.

Pilot-Touch is an exclusive John Deere development, yours optionally on both Diesel and gasoline "440" crawlers. Your nearby John Deere Industrial Dealer soon will be demonstrating crawlers with this new hydraulic-powered control. See him or write us for complete details.

John Deere Industrial Division, Dept. 2045, Moline, Ill.

JOHN DEERE *"Specialists in Low-Cost Power with a Heavyweight Punch"*

CATALOGS for Improved Municipal Services

Write directly to the address given or use the Post Card on page 51.

Children Will Be Safer At School

268 . . . if it is equipped with a Master Box that automatically and instantly notifies your municipal fire department and with an interior fire alarm system that simultaneously sounds an alarm to evacuate the children. For full facts, and information on a free survey of your fire defenses, write THE GAMEWELL CO., 1270 CHESTNUT ST., NEWTON UPPER FALLS 64, MASS.

Street Lighting Help

269 *Booklet* OTA is filled with ideas to help you with your street lighting project. It also contains descriptions and engineering specifications for five styles of street lighting standards. For a copy, write MILLERBERND MANUFACTURING CO., WINSTED, MINN.

Plastic Pipe Bulletins

270 KEASBEY & MATTISON CO., AMBLER, PA., has added four types of plastic pipe to its line of asbestos-cement pipe, and has prepared informative, illustrated brochures on each type of new plastic pipe. Request *"K & M" Acrylonitrile Butadiene Styrene Pipe, "K & M" Polyethylene Pipe, "K & M" Normal-Impact Polyvinyl Chloride Pipe,* and *"K & M" High-Impact Styrene Alloy Sewer Pipe.*

Dual Valve Sludge Pumps

271 *Bulletin* KSP-3 gives full facts on these rugged heavy-duty dual valve plunger pumps, designed to provide reliable positive sludge and slurry handling, regardless of the presence of large solids in the sludge. For a copy, write KOMLINE-SANDERSON ENGINEERING CORPORATION, MECHANICAL EQUIPMENT DIV., PEAPACK, N. J.

Steel Water Pipe

272 If you are interested in large-diameter water pipe that carries high internal pressures, withstands severe shock loadings, gives tight, leak-free joints and has great beam strength to span washouts, write for illustrated literature to BETHLEHEM STEEL CO., BETHLEHEM, PA.

Hydraulic Aerial Ladders

273 These aerial ladders are fully hydraulic and are available with power takeoff driven pumps or separate engine pumps, and in platform to ground heights of 27, 31, 35 and 41 feet. For full facts, and literature on a complete line of utility service truck bodies, write UTILITY BODY CO., 1530 WOOD ST., OAKLAND 7, CALIF.

Sewage Lift Station for Suburbs

274 That small group of homes located where gravity-line sewers are economically unfeasible without lowering the entire system, can be served by the "Vac-O-Jet," a pneumatic ejector lift station new to the Smith & Loveless line. It is designed to lift flows 30 to 100 gpm, is low in cost, inexpensive to operate, easy to install. It is ideal as a separate sewage lift station for lower capacities or as an accessory lifting device for installations of the S&L "Oxigest" sewage treatment plant where gravity flow is not practical or possible. Write SMITH & LOVELESS INC., P. O. BOX 8884, KANSAS CITY 15, MO.

Excavates on Spot, Digs Under Sidewalks, Opens Bell Holes

275 The 88-C, which gives you fully-protected hydraulics on both boom and dipper stick, produces up to 4 pay-cycles per minute, reaches 16' 11", digs 12' deep, swings 180° uninterrupted, mounts on all popular make wheel tractors. For descriptive literature, write PARSONS CO., SHAWNEE DEPT., NEWTON, IA.

Dependable Fire Hydrants

276 Up-to-date literature offered by the R. D. WOOD CO., PUBLIC LEDGER BLDG., INDEPENDENCE SQ., PHILADELPHIA 5, PA., describes the Mathews fire hydrant in detail and points out the many features that assure its dependability and make it always ready for service.

Low Profile and High Clearance

277 . . . give the operator of a D-14 utility tractor unobstructed vision, yet engine and axles are high to give more than 21-inch clearance under front axle. For details, and full facts on other utility tractors from 31 to 63 engine horsepower with companion equipment, write ALLIS-CHALMERS MFG. CO., UTILITY TRACTORS & EQUIPMENT, MILWAUKEE 1, WIS.

Meter Box Valves—Free Sample

278 Water works men can obtain free samples of these Ringstyle valves, developed by THE FORD METER BOX CO., INC., WABASH, IND., to attach the meter coupling nut to the service valve, putting the valve about 2" closer to the meter, thus saving fittings, pipe joints and valuable space, particularly in a meter box.

Mechanized Governmental Accounting

279 This new folder describes in full the necessary steps to automating municipal accounting and the many benefits to be enjoyed as a result of automation. For a copy, write ADVERTISING DEPT., BURROUGHS DIV., BURROUGHS CORP., 6071 SECOND AVE., DETROIT 32, MICH.

Stores Drawings, Blueprints, Tracings—Vertically, Economically

280 A 16-page bulletin from ART METAL CONSTRUCTION CO., 41 E. 42ND ST., NEW YORK 17, N. Y. details a practical vertical filing system for all kinds of engineering drawings. Reported to hold the same or more drawings in less floor space than any system of flat-filing, Planfiles also offer economy, fire and water protection, speed and portability.

Sewage Gas Control Equipment

281 *Bulletin* S-7301 describes a complete improved and expanded line of control equipment for gas systems of sewage treatment plants. It includes a schematic drawing of a basic sewage treatment plant, showing the functional location of the control equipment, and details in text each component. For a copy, write THE VAPOR RECOVERY SYSTEMS CO., 2820 N. ALAMEDA ST., COMPTON, CALIF.

Automatic Curb Paver

282 Now you can lay weatherproof bituminous curbs at speeds of 4 to 6 feet per minute without curbing forms. A new, self-propelled automatic heavy-duty curb paver, with compaction equal to that of a 12-15 ton roll, lays, compacts and finishes straight or curved bituminous curbs in one fast trip. For literature, write E. D. ETNYRE & CO., OREGON, ILL.

New Valves for Filtration Plants

283 These filter drain, backwash and rewash valves have been specifically designed for filter plant service. They fill the need for valves which can readily respond to repeated operation, and will provide flexibility for application to both high and low pressures. Eight-page *Bulletin* W-18 gives full facts: write GOLDEN-ANDERSON VALVE SPECIALTY CO., 1200 RIDGE AVE., PITTSBURGH 33, PA.

Instruments for Water Systems and Sewage Disposal Systems

284 *Catalog* No. 23 has been prepared by LEUPOLD & STEVENS INSTRUMENTS, INC., 4445 NE GLISAN, PORTLAND 13, ORE., as a concise guide for engineers and others interested in hydrologic instruments. It includes information on Stevens liquid flow recorders and indicators; telemetering systems; liquid level recorders; servo controls for recorders and transmitters; precipitator records and gauges; and accessory equipment.

Water Service Products

285 This valuable guide to a dependable line of water service products catalogs information on corporation, curb and compression stops, "T" valves, water tube fittings, couplings and solder nipples. For a copy, write STERLING FAUCET CO., MORGANTOWN W. VA.

Dual Purpose Electric Plant

286 If your utility construction and maintenance trucks use two kinds of auxiliary power, you will be particularly interested in finding out about these built-in dual purpose models that deliver power for electric tools and floodlights and keep batteries fully charged, too, making savings in fuel and engine maintenance. For details, write D. W. ONAN & SONS INC., 2551 UNIVERSITY AVE. S.E., MINNEAPOLIS 14, MINN.

Chlorine Manual

287 This third edition of the *Chlorine Manual* is broader in scope than its predecessors and reflects recent experience involving safety aspects of shipment and handling and use of chlorine. It is well illustrated and includes a valuable bibliography. For a copy, write THE CHLORINE INSTITUTE, 342 MADISON AVE., NEW YORK 17, N. Y.

Draftsman's Aids

288 A 6-page, gatefold bulletin entitled "Keep It Clean" describes materials to help draftsmen clean and protect drawings. It is available from KEUFFEL & ESSER CO., ADAMS AND THIRD STS., HOBOKEN, N. J.

For Concrete Streets and Highways

289 Those concerned with the construction and repair of concrete streets and highways will find the complete line catalog of concrete saws, diamond and reinforced abrasive blades, and hot and cold applied joint sealers offered by CLIPPER MFG. CO., SUITE 149, 2800 WARWICK, KANSAS CITY, MO. of considerable value.

66½-hp Tractor Shovel

290 . . . is bringing new economies to the small Village of Pewaukee, Wis. (pop. 2000) by proving its versatility and speed in such diverse work as cleaning a lakefront, tree trimming, stockpiling and loading, sanitary landfill, carrying loads of blacktop to street-patching areas. For full story, write CLARK EQUIPMENT CO., CONSTRUCTION MACHINERY DIVISION, 2495 PIPESTONE ROAD, BENTON HARBOR 44, MICH.

(See page 54 for more Bulletins)

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
NEW YORK 16, N. Y.

MUST YOU DO IT THE HARD WAY?

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

To THE AMERICAN CITY's Catalog Supply Department:
Please send me literature on items numbered as follows, starting on page 38

225	237	249	261	273	285	297	309	321	333	345
226	238	250	262	274	286	298	310	322	334	346
227	239	251	263	275	287	299	311	323	335	347
228	240	252	264	276	288	300	312	324	336	348
229	241	253	265	277	289	301	313	325	337	349
230	242	254	266	278	290	302	314	326	338	350
231	243	255	267	279	291	303	315	327	339	351
232	244	256	268	280	292	304	316	328	340	352
233	245	257	269	281	293	305	317	329	341	353
234	246	258	270	282	294	306	318	330	342	
235	247	259	271	283	295	307	319	331	343	
236	248	260	272	284	296	308	320	332	344	

I would also like to receive manufacturers' booklets on .....
.....
.....
.....

Name: (Please Print) .....
Title: .....
Address: .....
..... 1-60

A Listing of Your Business Connection is Important

To THE AMERICAN CITY's Catalog Supply Department:
Please send me further information on products described in "Purchasing News" section beginning on page 179, as circled below;

764	769	774	779	784	789	794	799
765	770	775	780	785	790	795	800
766	771	776	781	786	791	796	801
767	772	777	782	787	792	797	802
768	773	778	783	788	793	798	803

I would also like to receive manufacturers' booklets on .....

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Name: (Please Print) .....

Title: .....

Address: .....

..... 1-60

A Listing of Your Business Connection is Important

WHEN YOU WANT QUICK RESULTS?

Postage Will be Paid by Addressee

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BUSINESS REPLY CARD
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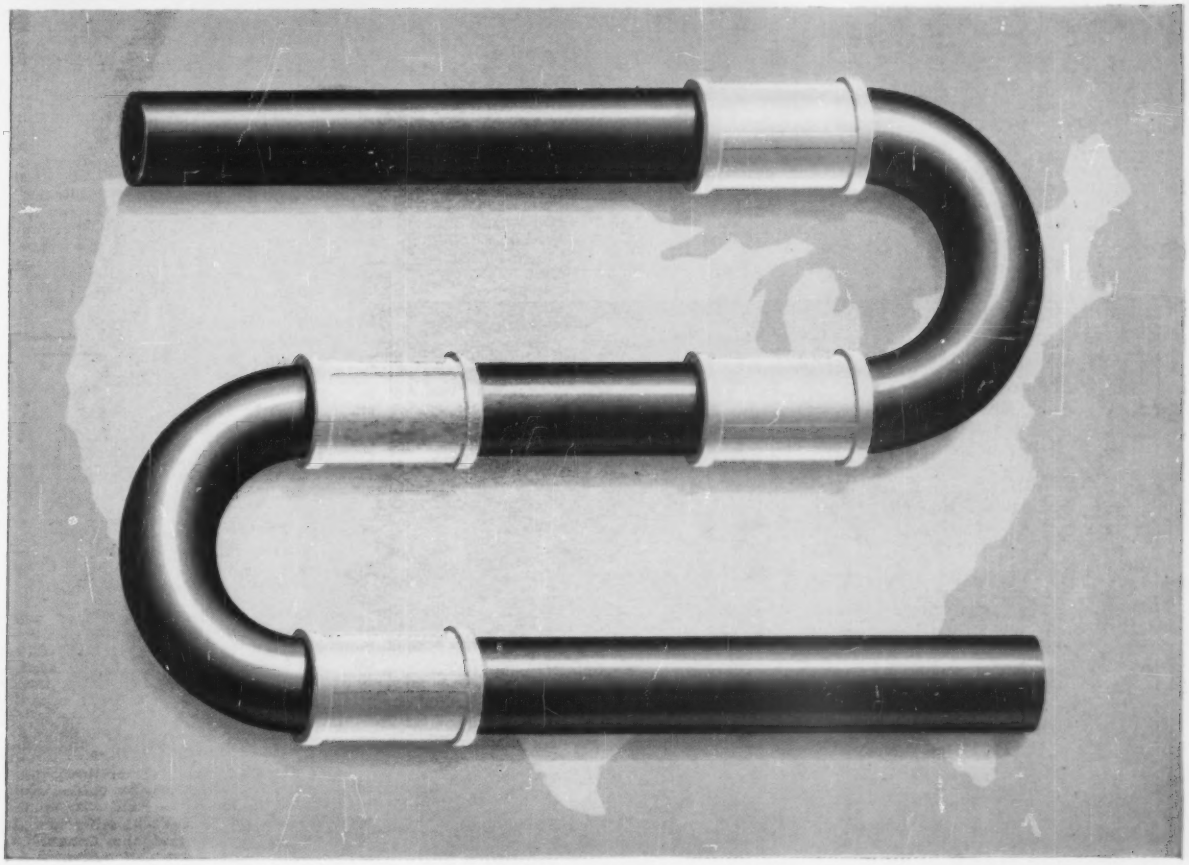
NEW YORK 16, N. Y.

Save time and effort by using these reply cards when you want additional information on any product or service mentioned or advertised in this issue.

Naugatuck KRALASTIC



9,000 miles of evidence...
KRALASTIC pipe is superior!

Count it by the mile or by the inch, the amount of KRALASTIC® pipe already installed—for everything from drinking water service to salt water disposal, from oil, gas and chemical lines to underground electrical conduit—offers convincing evidence of this superior pipe material's many advantages.

The record of those 9,000 miles of KRALASTIC pipe installed proves KRALASTIC's outstanding virtues. Proves the lasting properties of KRALASTIC. Proves the versatility of KRALASTIC. Proves KRALASTIC's extreme ease of installation. Proves its ability to take all kinds of weather, from extremes of Tropic heat to the depth of Arctic cold.

Benefit from the experience of the hundreds of users who have proved the unique advantages of KRALASTIC pipe. Investigate this superior plastic piping material yourself. Write for your free copy of the KRALASTIC story—"9,000 miles of KRALASTIC pipe".

US RUBBER

United States Rubber

Naugatuck Chemical Division

DEPT. 144K ELM STREET
NAUGATUCK, CONNECTICUT

KRALASTIC RUBBER-RESINS • **MARVINOL** VINYLS • **VIBRIN** POLYESTERS

Akron · Boston · Gastonia · Chicago · Los Angeles · Memphis · New York · Phila. · CANADA: Naugatuck Chemicals · Elmira, Ont. · Cable: Rubexport, N.Y.

FREE catalogs

Write directly to the address given or use the Post Card on page 51.

Valves and Hydrants

291 These valves and hydrants were recently installed to control the flow of water and provide fire protection throughout 100 miles of cast iron water mains serving the $450 million Perini-Westward development in West Palm Beach, Fla. For the story behind their selection, and for complete line details, write IOWA VALVE CO., OSKALOOSA, IA.

Stand Up to Trenching Jobs

292 Low, compact, narrow: the Parsons 155 Trenchliner was developed especially for city work. It is one of 10 different models: ladder-type digging 6" to 72" wide at depths of 19'; wheel-type digging 12" to 52" wide, at depths to 8½'. All are described in literature available from PARSONS CO., NEWTON, IOWA.

Solves More Traffic Signal Problems

293 *Bulletin* D-165 introduces the new Model RD-2 radar vehicle detector and shows how it meets requirements of all types of traffic-actuated signal controllers. Mounting, beam width, operation, maintenance are included in the discussion. For a copy, write AUTOMATIC SIGNAL DIVISION, EASTERN INDUSTRIES, INC., NORWALK, CONN.

HI-WAY Model J Traction-Type Tailgate Spreader

whether for Ice Control or Seal Coating...

HI-WAY Model J Tailgate Spreader Is Geared To Surface of The Road!

- For ice control, a spiral feed roller lays materials in heavier ridges that melt ice more effectively. Whereas thin blanket patterns can blow away. Pattern helps to identify curves, hills and stops . . . cautions drivers.
- For seal coating, a grooved roller handles all granular materials without free flowing. Depth of coverage is controlled by a feedgate. The dump body operates independently since the unit is hinged directly to the truck frame.

Other Model J Features

- *From road-travel position to spreading in 5 minutes. Operates at speeds up to 30 M.P.H.*
- *Spring loaded spreader hitch for fast, one-man hookup or disconnect*
- *All bearings sealed for life*
- *Machine-cut steel sprockets and heavy-duty roller chain*
- *Adjustable width up to 9 feet*

Write for the latest literature and complete specfications.

HIGHWAY EQUIPMENT COMPANY

633B "D" Ave. N. W. • Cedar Rapids, Iowa

HI-WAY
S-P-R-E-A-D-E-R-S
SALES & SERVICE

Brush Disposal Machines, Methods, By-Products

294 A well-engineered chipper that works quickly, safely, and dependably can turn brush disposal operations into a smooth, efficient, trouble-free service. For full facts on such a machine, important articles that describe five methods of brush disposal and ten new ways to utilize brush chips, write FITCHBURG ENGINEERING CORP., DEPT. AC-61, FITCHBURG, MASS.

A New Refuse Incinerator

295 The CT destructor features a Dump-and-Shaker Lever, which provides for easy removal of ash without constant bending and shoveling, and a "swing-a-way" charging door for safe, easy operation. It is 3½' wide and needs a maximum height of 4' for cleaning and stoking. For full story, write MORSE BOULGER, INC., 80 FIFTH AVE., NEW YORK 11, N. Y.

Locates, Traces Pipe

296 *Catalog* AC-12 describes a sensitive, low-maintenance pipe locator and tracer, that comes with built-in battery tester, all-metal case that removes static, "snap-on" tubular handle, and a written "life-time" guarantee. For catalog and technical data, write DETECTRON/COMPUTER MEASUREMENTS CO., UTILITY INSTRUMENTS DIV., 12970 BRADLEY AVE., SYLMAR, CALIF.

Flashers, Lanterns and Torches

297 *Catalog* No. 55 presents a complete line of hazard warning and portable lighting equipment and gives tips on how to use and properly maintain them. Of particular interest will be the new No. 680 long-distance warning light with 8" lens. Write R. E. DIETZ CO., 225 WILKINSON ST., SYRACUSE 1, N. Y. Also ask for literature on a new warning light (No. 211) for police and emergency vehicles.

Holds More Compacted Refuse

298 There's an M-B packer body for every need: 14 to 24 cubic yard truck-mounted; 32 and 38 cubic yard in both the Trail-Pack, self-powered trailer type models and the Contain-O-Pack self-loading system for "containerized" refuse collection. Design allows up to 4 cubic yards of usable area above rated compacted capacity of the body. For literature, write M-B CORP., NEW HOLSTEIN, WIS.

Removes Grit from Raw Sewage

299 *Bulletin* No. 6412 describes a combination unit that provides positive mechanical grit removal with conventional clarification in a single tank. It is applicable for maximum flows of 0.45 to 1.75 mgd and will remove grit from raw sewage without the need for costly and separate grit handling facilities. Write DORR OLIVER INC., HAVEMEYER LANE, STAMFORD, CONN.

Plastic Pipe

300 . . . for municipal use—water wells, water systems, golf courses, sewage systems — comprises the Cresline catalog, offered by CRESCENT PLASTICS, INC., DEPT. C-9, 955 DIAMOND AVE., EVANSVILLE 7, IND., which makes available complete technical and engineering services.

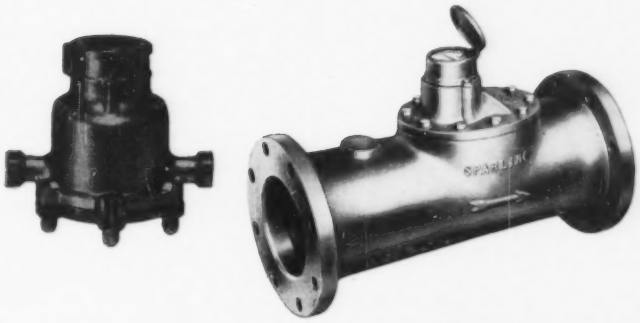
Pump Strainers for Municipal Use

301 These strainers are made in many sizes and from almost any metal. They are designed for nearly every municipal application. Full details are given in *Bulletin* 905, which is available from STRATAFLO PRODUCTS, INC., FORT WAYNE, IND.

(See page 56 for more Bulletins)

Announcing

A NEW NAME IN THE WORLD OF WATER METERS



On January 1, 1960 two of the oldest and best-known names in the field of water measuring equipment joined forces.

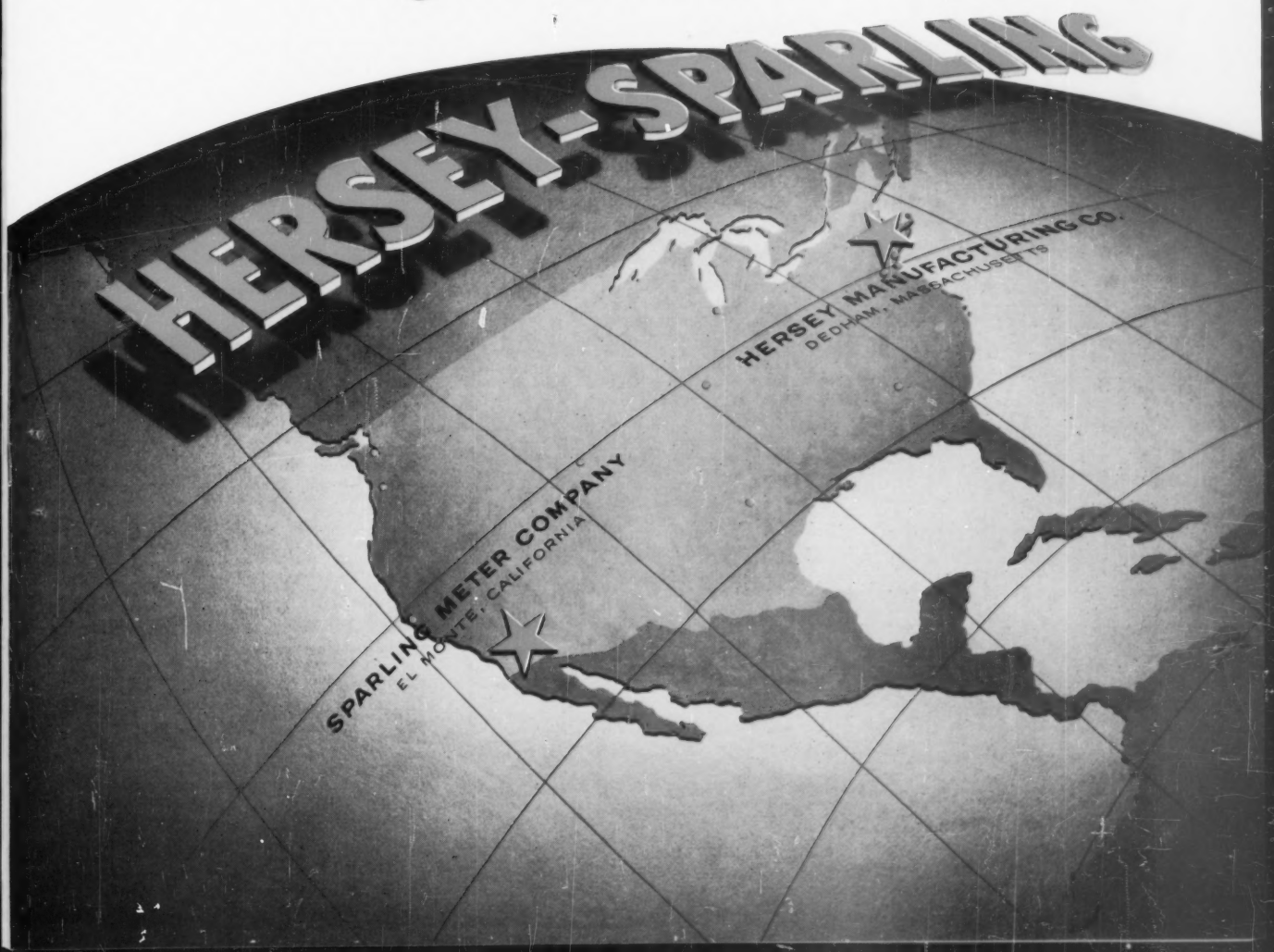
Hersey Manufacturing Company of Dedham, Mass., and Sparling Meter Company of El Monte, Calif., have merged under the name Hersey-Sparling Meter Company, with executive offices in Dedham, Massachusetts.

The new organization supplies meters ranging from small household models up to meters for pipe as large as 19 feet in diameter.

HERSEY-SPARLING
METER COMPANY

DEDHAM, MASSACHUSETTS

● *Branches In Principal Cities*



HAYS

the Quality Line IN WATER SERVICE PRODUCTS

CORPORATION STOPS

One of a complete line of Water Service Products

GENERAL PRODUCTS DIVISION
HAYS MFG. CO.
ERIE, PA.

MONEY SAVING catalogs

Write directly to the address given or use the Post Card on page 51.

Plagued by Snow Removal Problems?

302 New literature from SCHENEKER IRON WORKS INC., 350 SYCAMORE ST., BUFFALO 4, N. Y., describes a dependable line of rugged snow plows, some designed especially for installation on Willys vehicles and others for trucks with channel-type front bumper from the ½- to 1-ton class.

Street Name Sign Catalog

303 . . . designed to ease the task of engineers responsible for planning street name sign programs, has just been issued by CALIFORNIA METAL ENAMELING CO. Planned as a working kit, the catalog includes specification sheets on sign hardware and a new reflectorized process, Porcelite. For copies, write the company at 6904 E. SLAUSON AVE., LOS ANGELES 22, CALIF.

All-New Crawler Tractor

304 Counter-rotating tracks, torque converter, power shifting, more efficient diesel engine, functional design—are features that enable the OC-9 crawler tractor to step into tough jobs and speed up production. Matched equipment includes bulldozer, angledozer, scarifier, winch and loader. For full story, write THE OLIVER CORP., DEPT. 2232, 400 W. MADISON ST., CHICAGO 6, ILL.

Engineering Equipment Catalog

305 This new 1960 catalog describes over 3400 different items ranging from a small pocket-sized soil penetrometer to completely equipped mobile laboratories and nuclear testing equipment. It contains 316 pages and may be obtained free of charge by writing to SOILTEST INC., 4711 W. NORTH AVE., CHICAGO 39, ILL.

New Series of Technical Bulletins

306 . . . just published by SIMPLEX VALVE AND METER CO., LANCASTER, PA., updates all previous literature on the company's equipment. *Bulletins* 100, 720, 1003, 1004 and 1225 deal with, respectively, standard venturi tubes, Orthoplex Supervisory Control, mechanically operated rate of flow and loss of head gauges, pneumatic single and double indicating receivers and Type CCAV controlled closing air valve.

Refuse Collection Training Film

307 "Power Packing" is the title of a 20-minute color movie in refuse collecting that presents the advantages of continuous and complete compaction of refuse materials to gain larger loads through more and faster collections per trip. Interested municipal groups should state time and place showing is desired when they write to DAYBROOK HYDRAULIC DIV., YOUNG SPRING & WIRE CORP., BOWLING GREEN, OHIO.

Cloth for Municipal Uniforms

308 Range 373 is Franklin Worsted's symbol for top quality police and fire department uniform fabrics, made in all weights for all climates, stock dyed, 2-ply, fast color, and uniform in shade. For full facts, and information on corresponding qualities in worsted whipcords, gabardines and tropicals in either 100% worsted or worsted/dacron blends, write DAVID E. SINGER, SALES AGENT, FRANKLIN WORSTED CO., 40 E. 34TH ST., NEW YORK 16, N. Y.

Protect Parking Meter Collections—Free Sample

309 Police traffic departments and city finance divisions can now safeguard parking meter collections with coin bag seals used by over 6,000 leading banks throughout the country. Super TEK-TIV coin bag seals are very low in cost, come ready for instant use, and offer unfailable security. For details and free sample, write SECURITY SEAL COMPANY, 144 W. 27TH ST., NEW YORK 1, N. Y.

These Aluminum Ladders Roll Up

310 . . . from 12 and 16-foot lengths and can be stored comfortably in the trunk of a car. Lightweight and easy to carry, they unroll into strong, straight ladders that lock in rigid upright positions. They are ideal for emergency police and fire vehicles that usually carry rope ladders. For full facts, write ALADDIN'S PRODUCTS, INC., 50 WEST BROAD STREET, COLUMBUS 15, OHIO.

Improved Fire Fighting Apparatus

311 AMERICAN LA FRANCE, ELMIRA, N. Y., has made the chassis frame in its new 900 Series pumper heavier, stronger, more rigid and, like its other emergency vehicles, has equipped it with shock absorbers both front and rear to create increased road stability, better steering control and safety. Descriptive literature gives full facts.

Reduces Head and Power Losses at Intakes

312 The trash rack rake described and illustrated in *Bulletin* No. 158 is used on all kinds of stationary intake rake structures which have either inclined or vertical rack bars. It can ride down over stubborn debris and obstructions and work them free, as no guides at the rack bars are needed. Write ALLIS-CHALMERS MFG. CO., YORK WORKS, YORK, PA.

Flexible Plastic Pipe

313 *Bulletin* CE-57 describes the numerous uses, chemical resistance, technical properties and method of installing Supplex flexible polyethylene plastic pipe, approved for use with drinking water, light in weight and rust- and rotproof. For a copy, write AMERICAN HARD RUBBER CO., ACE ROAD, BUTLER, N. J.

75CFM Rotary Compressor

314 Easy starting, smoother running and able to deliver much cooler air than the reciprocating model it replaces, the Rotary "75" is also lower in cost and just right for an 80-pound pavement breaker. For full facts, request catalog literature from THE JAEGER MACHINE CO., 505 DUBLIN AVE., COLUMBUS 16, MO.

Powerful Digging Machine

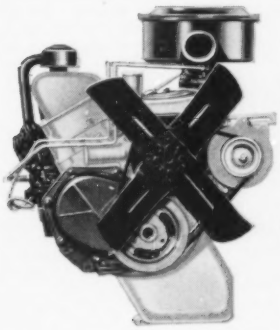
315 By writing to DEPT. 14H59, BUCYRUS-ERIE CO., SOUTH MILWAUKEE, WIS., you can find out how municipalities, counties, utilities and excavating and sewer contractors are using the Hydrocrane with Hydrohoe attachment to speed work and cut costs.

Takes the Work Out of Gear Shifting Tractors

316 A step-by-step explanation of how the new SynchroTouch transmission control operates is given in two new 8-page booklets on the 345-hp Caterpillar DW20 and DW21 Series G tractors. Schematic drawings illustrate the sequence of events involved in "shifting" by dialing the desired gear. Write for Form 33613 (DW20) or Form 33614 (DW21) to CATERPILLAR TRACTOR CO., GENERAL OFFICES, PEORIA, ILL.

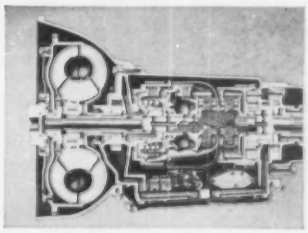
(See page 58 for more Bulletins)

MORE "GO" PER GALLON—Advanced engineering of the new Dodge Dart's Economy Slant "6" engine delivers outstanding fuel mileage, spirited acceleration, too.



ECONOMY SLANT "6" Brilliant new design produces maximum economy, outstanding performance on regular gas. 225 cubic inch displacement. Compression ratio 8.5 to 1. Horsepower 145 at 4000 r.p.m. Torque 215 lb.-ft. at 2800 r.p.m.

TORQUEFLITE SIX—The first automatic transmission designed exclusively for six-cylinder operation. Matches power-torque curve of Economy Slant "6" to get the most performance from the least amount of gas without unnecessary engine strain.



Saves like a 6...acts like an 8

Exceptional economy! It's yours with the newest of all six-cylinder engines, the Economy Slant "6", available to you in the new low-priced Dodge Dart.

Totally new design starts with a revolutionary inclined block. Slanted 30 degrees to the left, it allows semi-ram Equi-flow fuel induction. Separate tubes supply fuel to each cylinder for even distribution.

Big, easy-breathing overhead valves increase efficiency, gain extra mileage from every gallon.

Just one mile behind the wheel and you know that this is the industry's most modern six in performance, too. New semi-ram manifold, high-turbulence wedge-shaped combustion chamber and special high-efficiency camshaft give acceleration like you've never felt in a "six" before.

Combine Economy Slant "6" fuel mileage with the Dodge Dart's low price and minimum maintenance cost, you have the "savingest" police car yet.

Dodge Dart gives you the new durability and comfort of Unibody Construction, plus rugged Torsion-Aire Ride, Total-Contact Brakes, and special heavy-duty police features, too.

Choose from any one of four Dodge Police Pursuit models: Dodge Dart 2-door and 4-door models on a 118″ wheelbase, or Dodge Dart Station Wagon and '60 Dodge 2-door models on a 122″ wheelbase.

DODGE DART

POLICE PURSUITS FOR 1960

Record snows in upper New York State — no problem for this powerful A-W Super 300 grader equipped with V-plow and wing.

How exclusive features of Austin-Western graders

SPEED SNOW REMOVAL

Only Austin-Western graders offer all-wheel drive and all-wheel steering. Years of experience prove these two exclusive features help make Austin-Westerns the fastest, most efficient and powerful snow removal equipment available anywhere!

No front-end dead weight

All-wheel drive gives front-end traction to deliver powerful push-pull driving action for deep plowing—no front-end dead weight on an A-W.

Encountering heavy drifts, ordinary graders stall out, get stuck or bounce off. But not A-W's! All-wheel steering enables operator to steer the rear towards drifts, controlling traction and direction of travel to offset sidethrust of full plow load when widening or winging.

Precision hydraulic controls reduce operator fatigue—permit fast, easy operation from warm, weathertight cab. Quality built for dependable high performance; low maintenance. This next winter, rely on A-W graders; keep roads and streets open! Superior, too, for year-round all-purpose construction and maintenance.

Available in 6-wheel Super and 4-wheel Pacer series—wide range of weight classes and horsepower ratings!

ALL-WHEEL DRIVE puts power up front.

ALL-WHEEL STEERING lets you steer both front and rear.

Get all the facts today from your nearest Austin-Western distributor—or write direct!

Austin 100th YEAR Western

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

FREE catalogs

Write directly to the address given or use the Post Card on page 51.

Traffic Line Marking Made Easy

317 This 3-shoe unit does any type of multiple traffic striping job. It can put down three stripes simultaneously: 2 yellow and one white; 2 white and 1 yellow; 3 yellow or 3 white. Shoes from 2" to 6" can be applied. The #360 unit does a very creditable job at approximately 2 mph and handles easily. For full facts, request descriptive literature from FENCPAINTER DIVISION, 4911 S. RACINE AVE., CHICAGO 9, ILL.

Booklet on Coagulation

318 Valuable information on all phases of coagulation for water and sewage treatment are packed into a 38-page booklet, available from TENNESSEE CORP., 615-629 GRANT BLDG., ATLANTA 3, GA. Requests should be made on business letterhead.

Converts a Whisper Into a Roar

319 A new, fully-transistorized, battery-operated portable megaphone weighing only 6 pounds carries the human voice 600 yards. A separate microphone jack enables the unit to be used as a portable P. A. system as well as a hand-held megaphone. For full facts on "Megavox", write FANON ELECTRONIC INDUSTRIES, INC., 98 BERRIMAN ST., BROOKLYN, N. Y.

New Name in Water Meters

320 Two of the oldest and best-known names in the field of water measuring equipment—Hersey Mfg. Co. and Sparling Meter Co.—have joined forces under the name HERSEY-SPARLING METER CO., DEDHAM, MASS. Together, they supply meters ranging from small household models up to meters for pipe as large as 19" in diameter. Write for literature.

Surfacing Play Areas

321 If you are interested in obtaining information on a surfacing material that reduces the danger of playground accidents, minimizes wear on clothing and equipment, lowers expense of building maintenance, and increases the life and service of playgrounds, write AMERICAN BITUMULS & ASPHALT CO., 320 MARKET ST., SAN FRANCISCO 20, CALIF. Ask for details on Walk-Top.

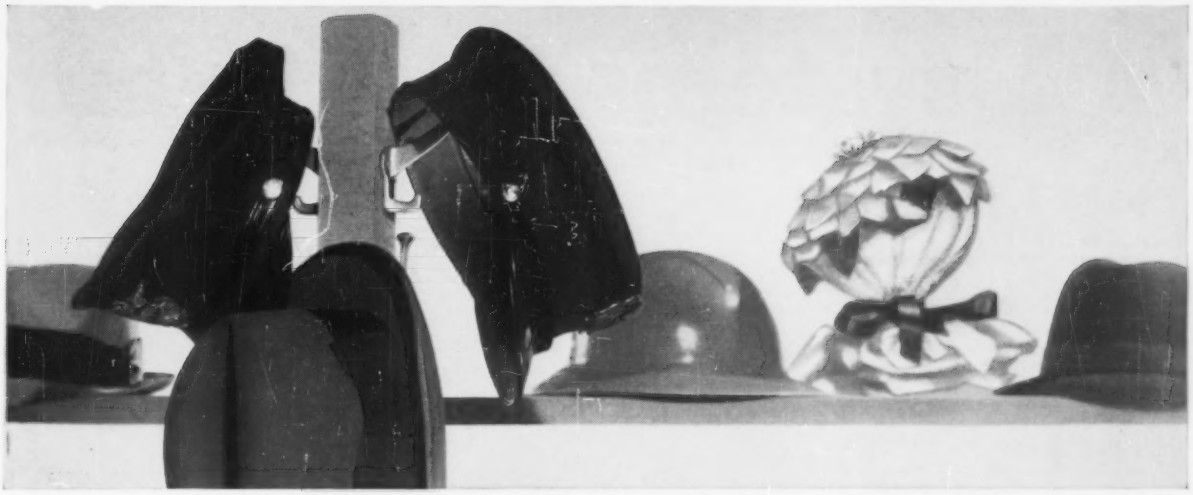
Improved Pipe Cutter

322 This hydraulic pipe cutter with newly developed auxiliary ram unit cuts cast iron water main through 18" diameter, tile or terra cotta pipe 6" through 36". It requires only minimum clearance. Portable and one-man operated, it is fully described in literature available from THE WHEELER MFG. CORP., BOX 688, ASHTABULA, OHIO.

Street Name Signs

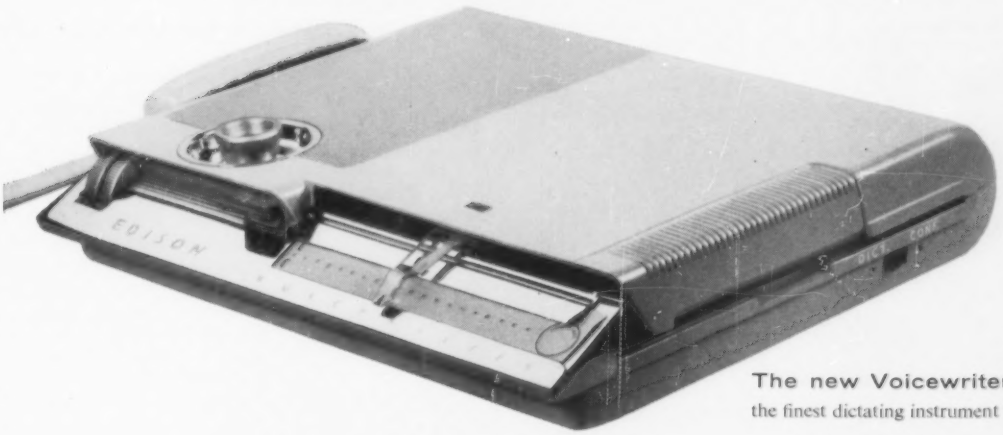
323 A two-piece, cast-aluminum street sign bracket, being rustproof, requires no maintenance, according to literature from U. S. STANDARD SIGN CO., 878 OGDEN AVE., TOLEDO 9, OHIO. Special brackets are available for 45° installation of street signs angled at intersections. The lower section may be used alone for mounting doubleface signs of various types.

(See page 62 for more Bulletins)



WHICHEVER "HAT" YOU WEAR...

You'll be hours ahead on paper work with the Edison VOICEWRITER!



The new Voicewriter—
the finest dictating instrument ever built

Mayor, councilman, clerk of court, police or fire chief—whatever you do—paper work can stand between you and the most efficient use of your time. That applies to your secretary's and clerical staff's time as well!

The best way to meet the challenge? Use an Edison Voicewriter! It lets you "talk away" letters, reports, memos, even instructions to your secretary just by taking the mike. Turn the Voicewriter Diamond Disc over to your secretary and you're free for more important activities!

She types exactly what you've said . . . not what you dashed off on paper or what she took down in shorthand. Your voice comes through clearly . . . no chance for error in transcribing.

Working with a centralized typing staff? Edison Voicewriter Centralized Dictating Systems are improving output and general efficiency for many government agencies—both state and local.

Everyone in the organization who originates paper work has a handy dictating phone ready for dictation at any time. Results: fewer backlogs, much greater accuracy, more time for *real* public service.

Test the Voicewriter on the job. Mail coupon today for free tryout or free literature. No obligation.

To: Edison Voicewriter, Dept. AC-1
West Orange, New Jersey

Okay, you've got me interested in the Voicewriter.

- ☐ I want a free "on the job" demonstration.
- ☐ I want literature.
- ☐ P. S. I also want details on your 3-lb. battery-operated tape recorder.

Name_____

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Agency_____

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Edison Voicewriter

A product of Thomas A. Edison Industries, McGraw-Edison Company, West Orange, N. J. In Canada: 32 Front Street W., Toronto, Ontario

McGRAW EDISON

4 systems to cut your

DEMPSTER DUMPMASTER®

If your hauls are getting longer, here's the system for you. The Dumpmaster handles 1/2 through 8 cu. yd. containers . . . gives you all the advantages of rat-proof, scatter-proof, fire-proof, enclosed refuse storage . . . plus peak efficiency when used on hand-loaded routes. It's safe! Clearance arms bridge cab. Economical! Hydraulically compacts 50 to 120 cu. yds. of loose refuse per trip, depending on the model. One-man operated, all operations automatically controlled from cab . . . in use from coast to coast.

Covered by U.S. Letters Patent No. 2,900,096

The DEMPSTER-DUMPSTER System of one truck handling any number of containers has saved municipalities many millions of dollars. All-steel, enclosed, sanitary containers are available up to 15 cu. yd. capacity. Patented sump-bottom containers available for wet or moist refuse. One man, the driver, picks up, hauls, dumps and returns the empty container . . . handles hundreds of yards of refuse daily. Now in use in hundreds of progressive cities.

DEMPSTER DUMPSTER®

How YOUR City Can Get a Scientific Analysis of its

Methods and techniques of mechanized refuse handling have undergone many revolutionary changes in the last 18 months. That's why far-sighted city officials from coast to coast are surveying . . . examining and comparing their present systems against these new developments.

Disposal areas are moving farther and farther out; new shopping, commercial and manufacturing areas are springing up to compound the city's refuse disposal problems and throw more burden on the tax dollar. To meet these specific problems, new equipment has been developed—some fits in one situation . . . doesn't fit in another.

Dempster Brothers maintains a staff of trained survey engineers who are specialists in analyzing methods of refuse storage, collection, transportation and disposal.

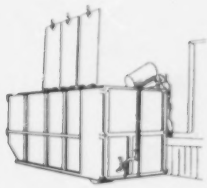
These skilled men are available to assist your planning groups *without cost or obligation*. Each year these engineers make hundreds of surveys in cities

refuse disposal costs

DEMPSTER® DINOSAUR

All structures shown are Patented or Patents Pending
Mfd. by
DEMPSTER BROTHERS
Inc.

The DINOSAUR handles detachable containers up to 40 cu. yds. and over, with gross loads of up to 15 tons. One man, the driver, picks up, hauls and dumps or puts down the giant containers on platform, ground or legs. Everything is handled hydraulically from controls in the cab . . . no winches, cables or sheaves. Can handle two or more containers at a time. Big capacity and big pay loads beat the long-haul problem. Excellent for use at big refuse generation points or as a portable transfer station for conventional packers.



DEMPSTER COMPACTION TRAILER & GRD 304-F-2

Big-capacity hydraulic compaction trailers have own power plant, haul up to 200 cu. yds. of loose material on every trip to the disposal area. Can be loaded with GRD 304-F-2, or ramp-loaded by DEMPSTER-DUMPSTERS, or conventional packer trucks. Available in two sizes, 42 and 53 cu. yds.

Disposal Methods FREE!

large and small. They meet and consult with municipal personnel at all levels, analyze costs, ordinances, capital outlay and then present a comprehensive report that compares present methods with other available techniques. Because of their experience and broad knowledge of *all* types of equipment, they are able to make many valuable suggestions even when Dempster Brothers equipment is not indicated.

If you would like to consult with one of our engineers, write today. There is no cost or obligation.

To: DEMPSTER BROTHERS—Dept. AC-1
Knoxville 17, Tenn.

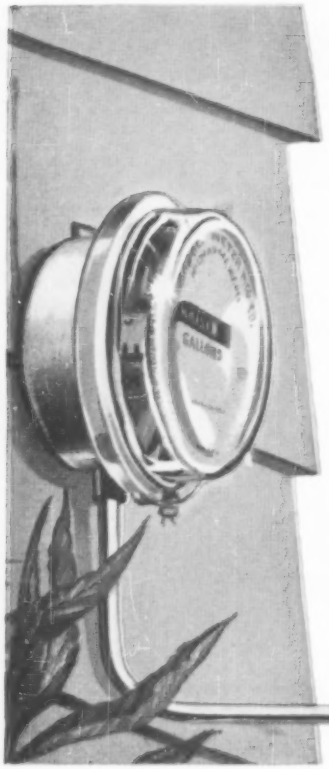
Please send: ☐ Information on Free Survey

Free Brochures on ☐ Dumpmaster ☐ Dinosaur ☐ Dumpster ☐ Trailer and GRD 304-F-2.

Name _____ Title _____

Address _____

City _____ State _____



New! BADGER Read-o-Matic* REGISTER

adds speed-reading to water metering

Here is the industry's first practical outdoor register — the Badger Read-o-Matic. Now meter reading routes can be completed in half the time — with no more wasted calls. Plus other important benefits such as:

• *No more "lockouts"* • *No more in-house accidents* • *No more access problems* • *No more inconvenienced customers*

The new Badger Read-o-Matic means a modern meter reading system that your water department can have now — and opens a whole new realm of possibilities for the future. You'll want to read about them in our free new Badger Read-o-Matic folder.

*Pat. applied for in U. S. A. and foreign countries

Badger Meter Mfg. Co. • 4545 W. Brown Deer Rd. • Milwaukee 18, Wis.

FREE catalogs

Write directly to the address given or use the Post Card on page 51.

Lighting Standards Catalog

324 KERRIGAN IRON WORKS CO., DEPT. A-1, NASHVILLE, TENN., has prepared a 70-page catalog that illustrates and gives engineering facts on both steel and aluminum street lighting standards.

Cold Weather Diesel Facts

325 By reading the article "Starting Your Engine in Cold Weather," by Herb Orwig, Development Engineer, TROJAN DIVISION, THE YALE & TOWNE MFG. CO., owners of diesel-powered equipment will learn how to start diesel engines quickly and efficiently in cold weather and eliminate the possibility of engine damage through incorrect starting procedure. Write the company at CHRYSLER BLDG., NEW YORK 17, N. Y.

Locates, Traces Pipe, Cables and Conduits

326 . . . to a depth of 18 feet and can be used to measure the depth of a line, to pinpoint valves, caps, risers and junctions, is the way introductory literature describes the "Signalmaster," Model TR-1A, a completely transistorized and new addition to the line of electronic detection instruments manufactured by the GOLDAK CO., INC., 1544 W. GLENOAKS BLVD., GLENDALE 1, CALIF.

Removes Tree Stumps

327 With the Eager Beaver, tree stumps are removed quickly and fastidiously, well below ground surface and without damage to curbs or pavement. The unit is hydraulically operated with all controls manifold mounted. Operation is safe and the unit trailer-mounted. For literature, write FITZ-HENRY-GUPTHILL CO., 135 FIRST ST., CAMBRIDGE 41, MASS.

Single Stick Crawler Control

328 With the hydraulic-powered Pilot-touch developed by John Deere, clutching and braking are automatic. The tractor operator can steer, stop, reverse, keep one hand free for full time control of loader, dozer and other equipment. For explanatory literature, write JOHN DEERE INDUSTRIAL DIVISION, DEPT. 2045, MOLINE, ILL.

Sludge Heaters

329 *Bulletin* 1001 describes the principle of operation, design and construction features, performance and dimension data of forced-counterflow, tube-within-tube sludge heater and heat exchanger units. It should prove a useful reference for those concerned with equipment of this type. Write RALPH B. CARTER CO., 193 ATLANTIC ST., HACKENSACK, N. J.

New Elevated Water Tank Design

330 The Aquatore is a doughnut-shaped structure, built on a single foundation to avoid possibility of unequal settlement and to simplify ground maintenance problems. It requires no pump house and offers significant reductions in head range. An 8-page illustrated bulletin from GRAVER TANK & MFG. CO., 4809 TOD AVE., EAST CHICAGO, IND., gives full facts.

Tractor Shovel Literature

331 THE FRANK G. HOUGH CO., 710 SUNNYSIDE AVE., LIBERTYVILLE, ILL., is offering updated literature and data on all its "Payloader" models and attachments, rugged, dependable working tools that save time on the job and the high cost of single-purpose machines. Write today!

Sweeps Streets Extra-Clean

332 An illustrated bulletin describes a vacuumized street sweeper that sweeps streets extra-clean at all sweeping speeds and controls dust without using water. Model 100 works well in crowded areas and has fast hydraulic dumping action. For full facts, write G. H. TENNANT CO., 751P N. LILAC DRIVE, MINNEAPOLIS 22, MINN.

Licks Common Valve Problems

333 These butterfly valves give drop-tight shut-off, prolong seat life by avoiding abrasion and distortion and by compensative adjustment, minimize maintenance through simplified construction. For facts on performance, sizes and constructions, write DARLING VALVE & MANUFACTURING CO., WILLIAMSPORT, PA.; request *Bulletin* 5904.

Tailgate Spreader for Ice Control, Seal Coating

334 For both services, the Model J traction-type spreader is geared to the surface of the road. For ice control, a spiral feed roller lays material in heavier ridges that melt ice more effectively. For seal coating, a grooved roller handles all granular materials without free flowing. Feedgate controls depth of coverage. For full facts write HIGHWAY EQUIPMENT CO., 633B "D" AVE. N. W., CEDAR RAPIDS, IA.

Low-Cost Tractor Attachment

335 The new Lev-L-All attachment that turns the M-F 202 Industrial Tractor into a grader, maintainer, leveler and grader is said to match the work output of any single-purpose 50-hp tandem motor grader in its weight class—and at much lower cost. For full facts, write MASSEY-FERGUSON INDUSTRIAL DIVISION, BLOCK 1000 S. WEST ST., WICHITA, KAN.

For Effective Insect Control

336 By writing to CURTIS AUTOMOTIVE DEVICES, INC., DYNA PRODUCTS DIV., P. O. BOX 297-B, WESTFIELD, IND., you can obtain complete information of an insecticidal fog generator—the Dyna-Fog Sr.—which offers adjustable fuel consumption, instantaneous formulation flow reading in gph, and exact gauge-dial for determining proper machine operation.

Long-Life Traffic Lamps

337 Duro-Test long-life V-beam traffic lamps provide the beam candlepower output specified by the Institute of Traffic Engineers. These lamps have a burning life of 8000 hours for the popular 67-watt size; 5000 hours for other wattages. For specifications and performance data, write DURO-TEST CORP., NORTH BERGEN, N. J.

Easier Snow Removal

338 Snow removal operations move more quickly and more economically when snow plows can be moved in instant up-and-down action from within the cab. For illustrated literature on power hydraulic controls for snow plows, write MONARCH ROAD MACHINERY CO., 1831 MICHIGAN ST., N. E., GRAND RAPIDS 3, MICH.

Off-Season Maintenance for Swimming Pools

339 NATIONAL POOL EQUIPMENT CO., P. O. BOX 1101, INDIANAPOLIS, IND., builders of low-cost, trouble-free prestressed concrete swimming pools, have prepared a leaflet to assist you in protecting your municipal pool and equipment against winter elements and so greatly reduce the chance of damage during off-season.

Evinrude's 1960 Big Twin Outboard

340 . . . is rated 40 hp at 4500 rpm and designed for constant, rugged duty. Thermostatic temperature control keeps it running at peak efficiency in any weather, on any water. It is available with a choice of props to fit boat and work. For full facts, write EVINRUDE MOTORS, 4143 N. 27TH ST., MILWAUKEE 16, WIS.

For Isolated Intersections

341 Latest addition to the Crouse-Hinds traffic control line is a traffic controller for intersections not requiring multi-purpose control systems. It's a two-movement, electronic "fixed time" controller with six signal circuits and four intervals in the color sequence. For your copy of *Bulletin* 2720 describing this FT-300 Series, write CROUSE-HINDS COMPANY, SYRACUSE 1, N. Y.

Sludge Collectors for Settling Tanks

342 *Book* 2546 describes and illustrates six different series (each in several types) of Circuline revolving sludge collectors, each designed to serve a distinct purpose and to assure positive removal of settled solids. Tables and instructions for determining the size of settling tanks are included. Write LINK-BELT CO., PRUDENTIAL BLDG, CHICAGO, ILL.

Plastic Municipal Cables

343 A 4-page bulletin lists and describes plastic cables of standard constructions for police and fire alarm and traffic control use. They are designed for use at 600 V or less when installed in the air on messengers or underground in conduits. For catalog literature, write THE REX CORP., HAYWARD RD., WEST ACTON, MASS.

Two-in-One Valve

344 This single unit does the work of two conventional butterfly valves and a flanged "T" connection, giving perfect flow control in cooling water systems and in other applications where two streams flow to or from a single pipe. The Triangle valve is available in sizes 1" through 12". For details, write U. S. VALVE & ENGINEERING CO., P. O. BOX 14015, HOUSTON, TEXAS.

New Floating Digester Pontoon Cover

345 CHICAGO PUMP CO., 622 DIVERSEY PKWAY., CHICAGO 14, ILL., has redesigned and engineered its digester pontoon covers to incorporate the latest standards of structural design, to provide the highest live load safety factor, and for operating gas pressures to 12" of water with requisite ballasting. Forty-page illustrated *Bulletin* B-100 gives full facts.

Tractor Catalog

346 A 24-page brochure, well illustrated with photographs of job applications, cutaways, sectional views and drawings that explain the design and operating features of Euclid's new Model C-6 crawler tractor, can be obtained from the SALES PROMOTION DEPT., EUCLID DIVISION OF GENERAL MOTORS CORP., CLEVELAND 17, OHIO. Request *Form* No. 607.

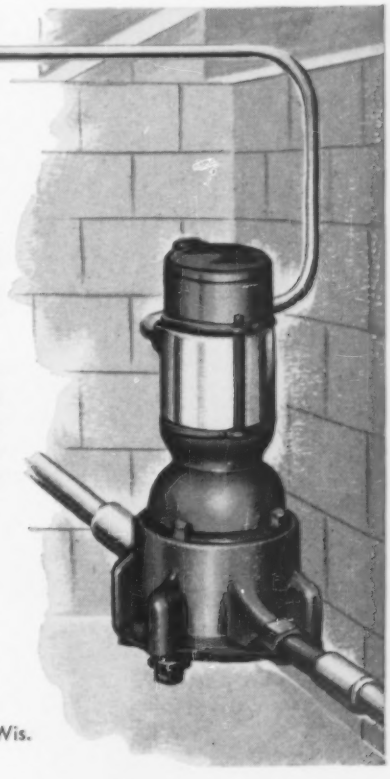
(See page 66 for more Bulletins)

Here's the big news behind the industry's first practical outdoor register

The Badger Read-o-Matic is powered entirely by the meter to which it is attached . . . works on an exclusive "pulse" principle. As water flows through the meter, the generator sends a pulse by wire to the Badger Read-o-Matic register outside for accurate recording.

Like our Badger meters, the Badger Read-o-Matic is precision-engineered — thoroughly tested by our trained water meter experts in the laboratory and in the field. Badger Meter products are the result of over 50 years of *specialized* water meter experience — products that excel around the world in accuracy, durability, dependability and low maintenance cost.

Send for free, colorful brochure that tells you all about the revolutionary Badger Read-o-Matic. For an actual demonstration, see your Badger representative or write us direct.



Badger Water Meters

Badger Meter Mfg. Co. • 4545 W. Brown Deer Rd. • Milwaukee 18, Wis.

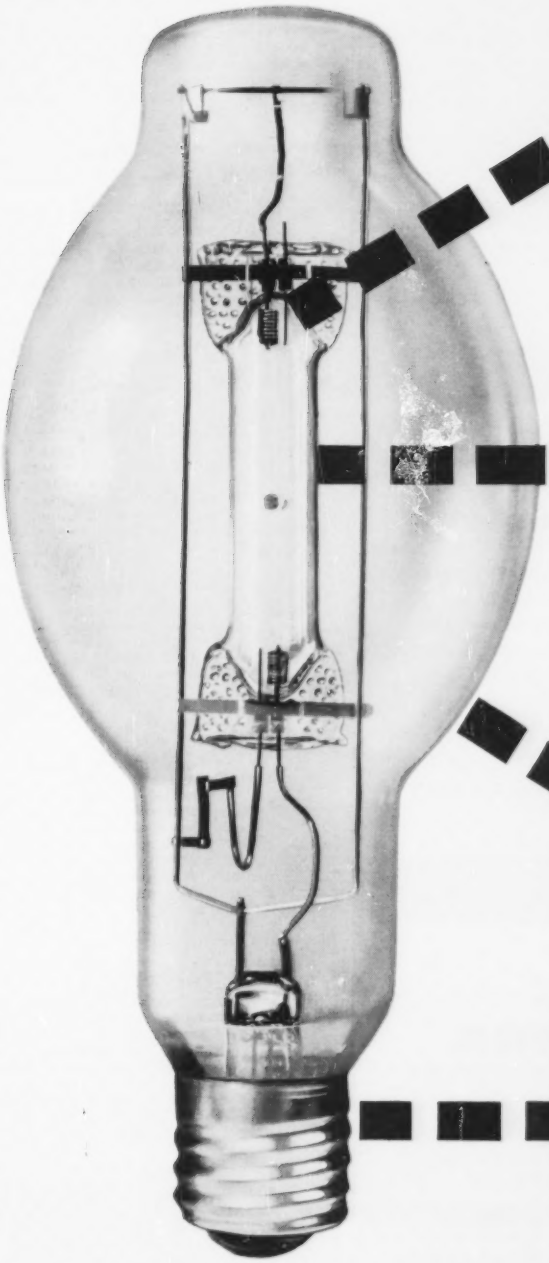
EXCLUSIVE WEATHER LIFEGUARD™ ARC TUBES

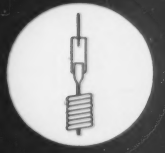
YOUR BEST BUY IN MERCURY LAMPS!

By any standard of comparison, new Westinghouse "Lifeguard" mercury lamps are the most economical choice for industrial, street, and parking lot lighting. The exclusive Westinghouse "Lifeguard" arc tubes in these lamps save you money by maintaining high initial light output longer. And, they make possible lower-cost new lighting installations.

In addition to getting more light per dollar, you save on labor and maintenance costs, too, with less frequent lamp changing. And "Lifeguard" lamps are made with famous Westinghouse "Weather Duty" bulb construction for resistance to thermal shock, moisture and all industrial fumes. New Westinghouse "Weather Duty" lamps with "Lifeguard" arc tubes are interchangeable with other types of the same wattage. Make the change today. Contact your authorized Westinghouse lamp agent or nearest Westinghouse sales office.

DUTY™ LAMPS WITH MAKE WESTINGHOUSE





New design electrodes with specially-compounded and locked-in emission material virtually eliminate light-robbing arc tube blackening.

"Lifeguard" arc tube improves lumen maintenance... 85 percent of initial light output after 10,000 hours.

First with "Weather Duty" lamps... fume-proof and moisture-proof, shock-resistant glass.

Permanent-grip silicone cement holds bases tight for the life of the lamp. Remains strong at high temperatures. No strain on glass.

YOU CAN BE SURE... IF IT'S Westinghouse

Westinghouse Lamp Division · Bloomfield, N. J.

LOW PROFILE...you see

HIGH CLEARANCE...you go!

An impossible combination? Not at all! On Allis-Chalmers utility tractors, the compact, frill-free design keeps the top line low to let operators see where they're working. The engine and axles are high to give you more than 21-in. clearance under a D-14 front axle! You move free and easy over rough or soft ground on any project!

This is the kind of practical engineering—real payoff design—you'll find in Allis-Chalmers utility tractors. Get the facts for comparison, free for the price of a post card! Use the handy coupon below *today!*

D-10 • D-12 • D-14 • D-17

Utility tractors from 31 to 63 engine horsepower with companion equipment to match your needs!

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ALLIS-CHALMERS MFG. CO
Utility Tractors & Equipment, Milwaukee 1, Wisconsin

Please send me more information about Allis-Chalmers utility tractors with ☐ backhoe ☐ loader ☐ fork lift

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City_____ State_____

SOLD BY ALLIS-CHALMERS DEALERS EVERYWHERE

MONEY SAVING *catalogs*

Write directly to the address given or use the Post Card on page 51.

Heavy-Duty Pipe Cutters

347 Water works men will appreciate the rugged construction of these pipe cutters, which have been equipped with long-lasting cutter wheels and assure no pipe breakage, no re-cutting and no spoilage. They are available in three sizes for pipe up to 16" diameter. For descriptive literature write ELLIS & FORD MFG. CO., 1100 COOLIDGE RD., BIRMINGHAM, MICH.

New Loader for John Deere and Farmall Tractors

348 This heavy-duty loader, announced by FREEMAN LOADER CORP., BLAIR PIKE RD., PERU, IND., fits 12 John Deere Models (A through 730) and 10 Farmall models (H through 560). Designated Model 620, the new loader has a 9-cubic-foot bucket (combined with gravel plate) 40" wide with bolted-in 1⅛" axle steel teeth. It is easy to attach and detach.

For Better, More Economical Street Signs

349 By writing to DEPT. RKB119, 3M COMPANY, ST. PAUL 6, MINN., you can obtain valuable information on an automatic sign applicator that can be used by municipal crews to refurbish traffic signs, reflectorize street name signs, and make bridge markers more quickly and at lower cost. Write today!

New Fire-Fighting Boom

350 Descriptive literature lists 10 major advantages of the Pitman Snorkel: they add up to greater-than-ever safety, speed and versatility for fire fighting and rescue work. For full story, write SNORKEL FIRE EQUIPMENT CO., DEPT. AC, GRANDVIEW, MO.

Sewage Testing Units

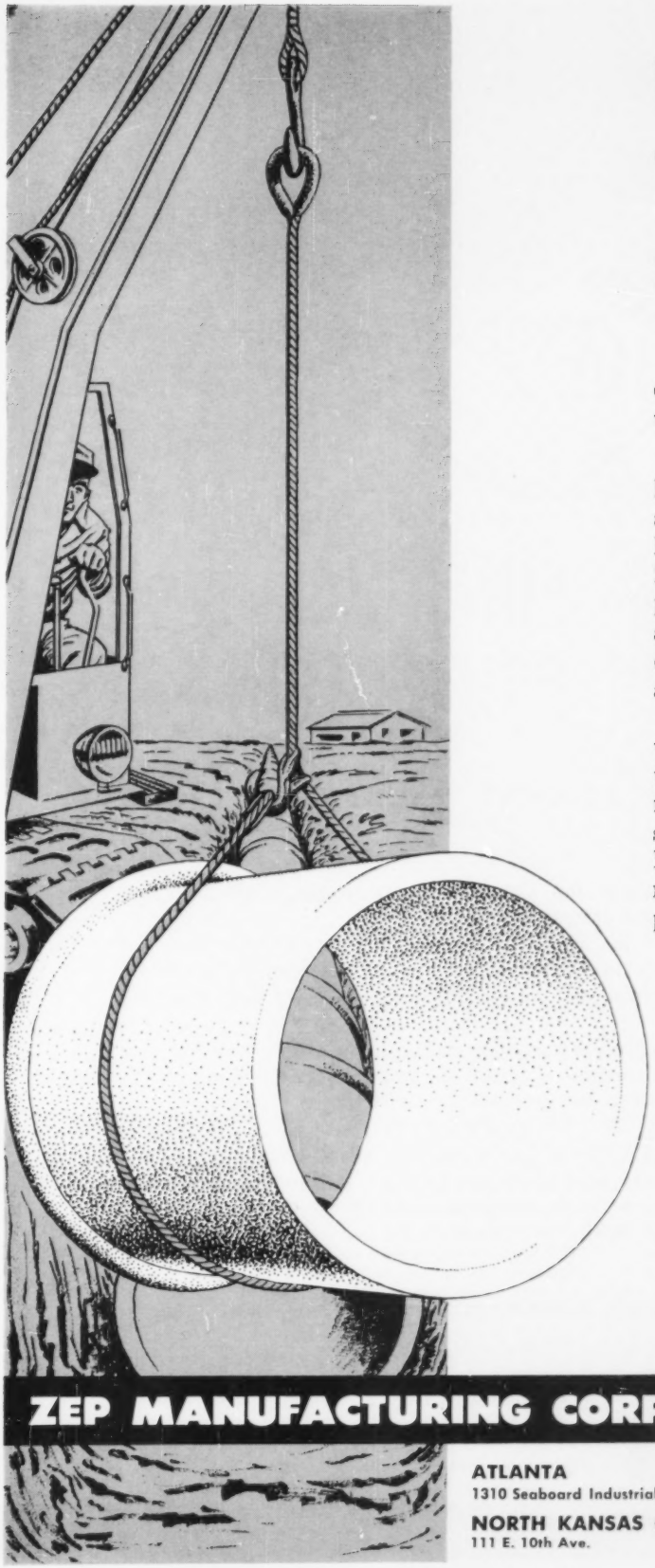
351 The "packaged labs" described in fully-illustrated technical *Bulletin* FS-242, contain everything necessary for up-to-date waste-water analysis—from BOD incubators to red pencils. They are available for small plants (under 7500 pop); large primary-treatment plants (over 7500); medium-size secondary-treatment plants (7500-25000); and large secondary-treatment plants (over 25,000). Write FISHER SCIENTIFIC CO., 717 FISHER BLDG., PITTSBURGH 19, PA.

No More Dingy Downtowns

352 A 12-page booklet illustrates how big and little cities met the challenge of poorly lighted downtowns. "Before" and "after" pictures, and application data are given, and mercury, fluorescent and filament luminaires are pictured. For a copy of *Bulletin* GEA-6989, write GENERAL ELECTRIC CO., SCHENECTADY 5, N. Y.

Adjustable Pumps

353 Eight-page *Bulletin* CP4.1a describes the ACAP pump as having an unlimited range of operational control for any pumping job with variable capacity and head requirements. It is designed for either direct drive or *Texrope* drive and is available with either open or semi-closed impeller, in capacities up to 45,000 gpm, in sizes from 3" to 36" discharge, and is able to pump against heads to 270 feet. Write ALLIS-CHALMERS MFG. CO., MILWAUKEE 1, WIS.



bury it, but don't forget it

Once sewer pipe is in the ground, you don't want to dig it up again.

The best way to avoid that expensive problem is to positively prevent blockage. A simple maintenance expedient will always keep your sewer lines open . . . regular use of ZEP SEWER AID. This powerful compound will quickly clear sewer lines of ANY alkali-soluble obstruction . . . accumulated debris, grease encrustations, industrial waste, and even tough tree roots.

In emergencies, fast acting Zep Sewer Aid will clear the line from end to end with little time and labor cost, and NO investment in mechanical equipment. It is harmless to the sewer pipe itself, even when used for prolonged periods. In fact, it's a good maintenance buy that solves your sewer clearing problems *when* or *before* they arrive.

Zep Maintenance Experts cover the country. If you want to talk to one, drop us a line, or just write for information and you'll have it by return mail.

FIRST
in Maintenance
and Sanitation

ZEP MANUFACTURING CORPORATION

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1310 Seaboard Industrial Blvd.

NORTH KANSAS CITY
111 E. 10th Ave.

CLEVELAND
13112 Broadway

DALLAS
1103 Slocum St.

FINANCIAL PROTECTION

for your most vital service

Water . . . your community's most important single service . . . must be protected by sound financing. The only *sure* protection is the sustained accuracy of your water meters.

If a meter becomes inaccurate, it starts to give away revenue. In home after home, leaks and carelessness go scot-free. The warning voice of the meter is gradually stilled, and wanton waste soon uses up your available water supply.

Worse yet, lack of proper income makes it impossible to build new capacity without tremendous losses. Water shortages soon become critical. Your city's development program soon dies . . . of thirst.

How guard against this? Set up a good meter testing and repair program. Pick meters that stay accurate longer. Talk to your meter superintendent . . . the man whose efforts guard your water supply. Ask which brand of meter consistently gives highest sustained revenue . . . with lowest repair and depreciation. We sincerely believe your answer will be "Trident."

NEPTUNE METER COMPANY 19 West 50th Street • New York 20, N. Y.

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Branch Offices in Principal American and Canadian Cities.

neptune

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TRIDENT WATER METERS

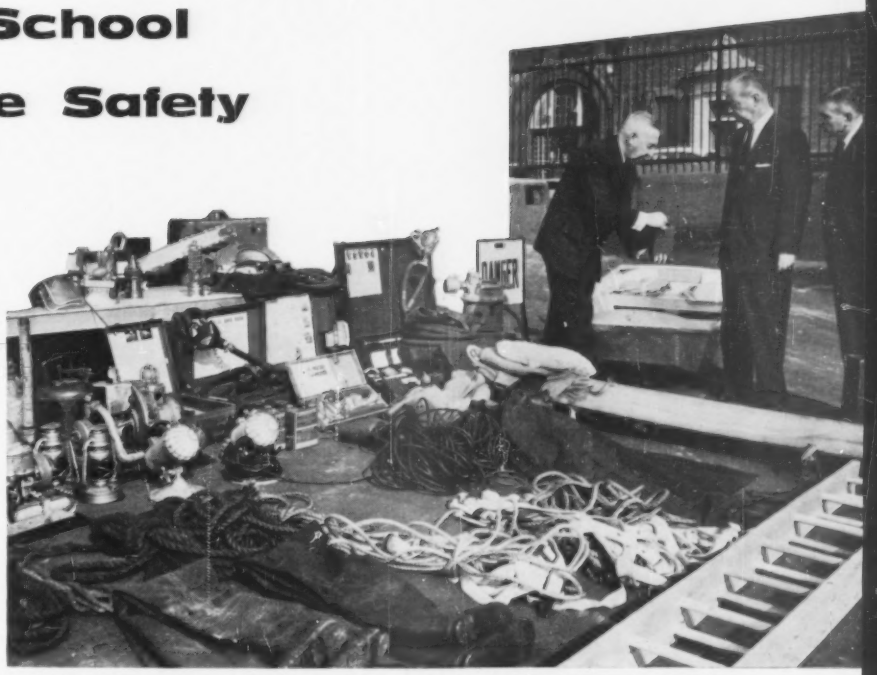
JANUARY 1960

The American City

Brooklyn's School Of Sewerage Safety

. . . keeps its crews alert to the ever-present dangers involved in sewer maintenance work

By SOLOMON LEVI, P.E.*
Director of Safety



John Cashmore, Borough President of Brooklyn, flanked by Thomas P. McKenna, Superintendent of Sewer Maintenance (left), and Charles A. Riedel, Chief Engineer, Bureau of Highways and Sewers, inspect the wide array of safety equipment carried by each of the Borough's sewer maintenance trucks.

The article "Stay Alive In That Sewer" (THE AMERICAN CITY, May 1959, page 123) calls to mind how fortunate we in Brooklyn have been for the past 20 years. While we experienced no deaths, three men died in Queens, N. Y. two years ago and shortly before that two men died in Manhattan.

While luck may account for our good record during the early years, we like to feel that training facilities set up in 1951 played an important role in maintaining this record over the past eight years. During this period many new industrial processes have actually increased the types and occurrences of dangerous fluids and gases in sewers.

This training program has had the support of Borough President John Cashmore and Charles A. Riedel, Chief Engineer, Bureau of Highways and Sewers.

Shop-Built

Every city can afford training facilities such as we have at our Highway and Sewer Department yard. Department personnel constructed the various units from salvaged material plus about $250 worth of new material consisting chiefly of several lengths of 36-inch corrugated steel pipe.

The two-unit sub-surface safety training installation comprises:

1. A full scale model sewer, completely above ground, consisting of 45 feet of 36-inch corrugated steel pipe leading into a brick manhole eight feet high, complete with sewer stubs, manhole head and cover.

2. A gas or smoke chamber standing about six feet from the manhole of the sewer assembly. It is eight feet by eight feet by eight feet in size, built of fire-retarded wood and floored with concrete. An overhead platform, paved with asphalt and surrounded with guard rails, connects the chamber and top of manhole, serving both as a roof for the chamber and a section of simulated roadway in which the manhole is set. A stairway affixed externally to a wall of the gas chamber provides access to the platform. Entrance to the chamber is by a conventional door, and the exit is a ground level "escape hatch" door deliberately made only three feet high.

The model sewer provides as realistic a duplication of actual working conditions in a sewer as is possible. During instruction, the pipe contains running water, usually to a depth of six inches. This can be varied by a wooden weir at the exit end.

The trainees in pairs enter the sewer through the manhole, climb down a ladder and crawl through the sewer. We selected a 36-inch pipe as this is the smallest diameter sewer our men may enter.

Trainees proceed through the pipe equipped with all the necessary protective devices, which may include gas masks, body safety harness, hard hats, wading boots, sound power phones, and similar items.

Shielded windows of shatterproof glass placed at ten-foot intervals permit observation of those

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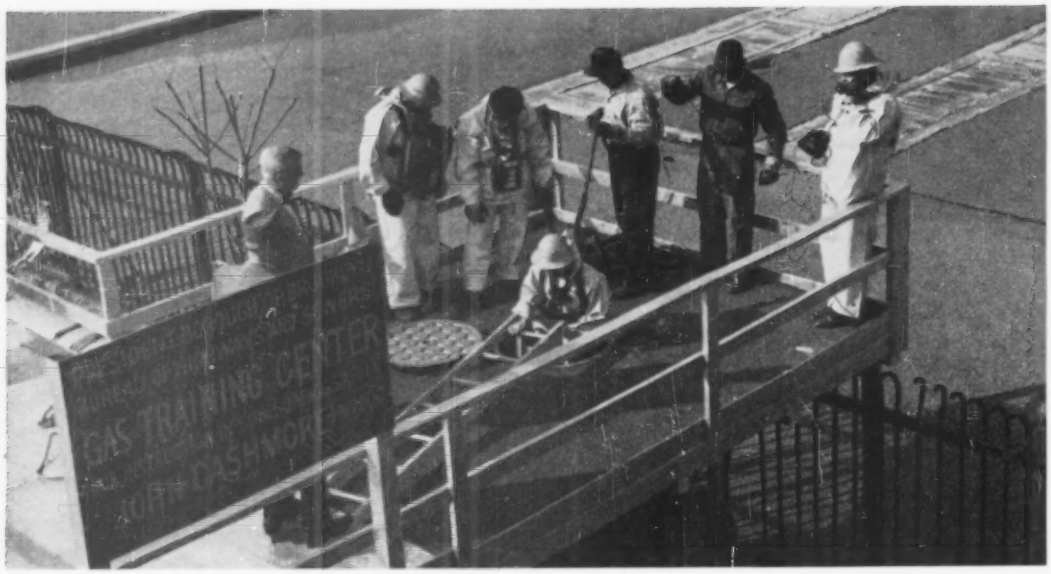


Entrance to the training sewer is an exact duplicate of actual field conditions, even including bituminous surfacing around the manhole covering.

within. As further protection, the sections of pipe are secured to one another by sleeves provided with quick decoupling attachments. In case of trouble a complete pipe section can be removed from the line and the trainees released in a matter of seconds.

The gas training chamber serves two primary functions: psychological conditioning — to accustom trainees to the presence of nonviable atmospheric conditions while wearing gas masks; and to provide the actual setting in which trainees can acquire the skills associated with putting on, operating and taking off masks of various types in confined spaces. We create the training atmosphere first with ordinary smoke and later with toxic mixtures of sulphur dioxide and hydrogen sulphide. An instructor always accompanies the trainees in the chamber to observe and note their reactions as well as for reasons of safety.

All the 130 supervisors and employees assigned to sewer maintenance work have been trained in detection of toxic and explosive gases and in the use of protective devices, especially gas masks, respirators and ventilators and in first-aid procedures.

We conduct classes on a crash training program, each employee receiving the complete course in one day.

Sewer gangs with their foremen report in the morning for one-half day of first-aid instruction in the treatment of injuries that might be expected to occur in the type of work these men normally do. They learn to treat injuries and bleeding caused by cuts, abrasions, lacerations and other wounds, burns which are caused by heat as well as caustics, and most important, the stoppage of breathing which may happen from such causes as asphyxiation, drowning, concussion, electric shock, fainting, heart failure, or some other organic disturbance

In the afternoon these men become acquainted with the common atmospheric hazards encountered in present-day sewers. These hazards include the lack of sufficient oxygen to sustain life and the possible presence of carbon monoxide, carbon dioxide, hydrogen sulphide and sulphur dioxide. In addition, there is the hazard of gases which are not only toxic but dangerously explosive.

Despite current provisions of the New York administrative code against discharge of harmful materials into the sewers, we still find such gases and vapors in our sewers as gasoline, naphtha, benzine, dry cleaning fluids from various sources, and the frequently prevalent methane, which can be generated from stagnant sewage or may seep into our sewers from leaking illuminating gas mains, and other sources.

All sewer maintenance personnel in this bureau have been trained to date. Short periodic retraining courses are given as required, to keep the men properly conditioned and to bring to their attention new procedures whenever such are developed.

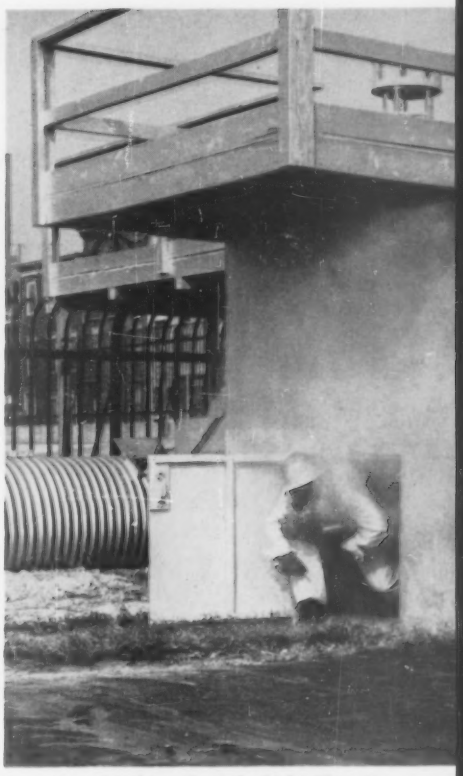
The need for training before sending men into the field can best be explained by a brief description of our sewer system and the work involved.

The Borough of Brooklyn, comprising 84 square miles, is home for some 2,750,000 people. We have three systems—combined, sanitary, and storm, with a size range of eight-inch pipe for the smallest sanitary sewer to the largest storm drain, a four-barrel conduit, measuring 85 feet across by 25 feet high. Total mileage is approximately 1,700, of which 400 miles are considered trunk lines, and two-thirds of the 1,700 miles is of the combined type. The deepest sewer is 95 feet below the street surface.

All told, the sewer maintenance force under Superintendent of Sewer Maintenance Thomas P. McKenna, totals 180 men. The basic sewer cleaning crew consists of a foreman, vehicle operator, and four laborers. During the five weekdays seven such crews work the seven districts in the borough plus one night crew and one special crew with a radio-equipped truck. On Saturdays, Sundays and holidays we work two shifts for a total of 16 hours, with two crews

A trainee emerges from the far end of the sewer. Note the weir at the entrance; it can be varied in height to regulate the water depth in the sewer.

Only a few seconds are required to remove a 10-foot section of the pipe to rescue a trainee in case of emergency.



Learning to use various types of masks under adverse conditions forms part of the training program. Note the smoke coming out of the three-foot-high escape hatch.

working each shift. All crews work through a central dispatching office and must contact the office once every hour.

Besides cleaning, the work consists of repair and rebuilding, with a top limitation of $5,000 per project placed on rebuilding by our men.

On the average, each year the department reconstructs about 2,500 feet of sewer and rebuilds or repairs about 150 manholes and 250 catch basins. We have about 150,000 manholes and 24,000 catch basins in the borough.

The department has nine riding units (trucks) for sewer cleaning. Each is fully equipped with an explosimeter, various gas indicators, an air blower, masks, radiation detection device, turbine jet nozzle, harnesses, life lines and similar safety equipment. All power tools used in the sewers are pneumatic, and all lighting is of low voltage D.C.

Men preparing to enter the sewer must also be cautious of excessive heat. Although laws restrict the temperature at which material can be discharged into a sewer, they are not always complied with. The average air temperature in our sewers ranges between 70-75°F all year around.

Each year we clean about 21,000 of the 24,000 catch basins in the borough, removing about 3½ yards of material from each basin. We have ten crews on this work. Each work unit consists of one orange-peel basin machine with operator and helper plus one 7½-ton truck with operator.

Such a complex system, serving an extremely wide range of manufacturing, poses many problems and dangers. Thus, our crews must be prepared and trained. However, when it comes to safety, the sewer cleaning and maintenance crew of every city, regardless of size, should be trained to handle safety devices and be carefully instructed as to the dangers involved. To help promote such a program, we will be happy to answer all questions concerning our training operations.

The training facilities also include models of a catch basin, sewer connections and similar items to demonstrate their construction and use.

With this equipment, the District personnel makes its own service connections and installs its own mains.

A growing water district continues its fight to hold the price line by installing . . .

Automatic Controls to Lower Costs

By R. W. McCANN*

The latest step in the Lakewood Water District's continuous struggle to keep costs down consists of the installation of automatic controls to program pump operation and gain maximum use of all storage facilities. From a humble beginning of 369 customers, the district now has over 7,000 water services, 847 hydrants, 123 miles of 4- to 16-inch asbestos-cement mains, eight elevated tanks, standpipes and reservoirs, and 11 deep well pumps, six of which are Byron-Jackson submersible booster pumps and two inline booster pumps. Just checking wells and reservoirs kept one man and a piece of equipment pretty well tied up. We felt that most of the cost of this operation could be saved through the use of automatic controls; through actual experience we have found this to be true to the amount of approximately $5,000 per year. In addition recorders give us information useful in checking each pump's efficiency.

After checking with various cities and water systems using automatic control equipment, the district, on a bid basis, entered into a contract with the Service Control Company of Portland, Ore., for the installation of a system of controls. The equipment consists of:

1. Controls transmitting water-level information from each storage facility to a master control panel in the main office, recording it on 30-day charts.

2. Equipment at each pumping station to program the pumps to the respective storage facility, making it possible to keep the water in the tanks and reservoirs to within six inches of any given level.

3. Timing and gallon-totalizing recorders on the master control panel to record the running time of each pump and the gallons of water each delivers.

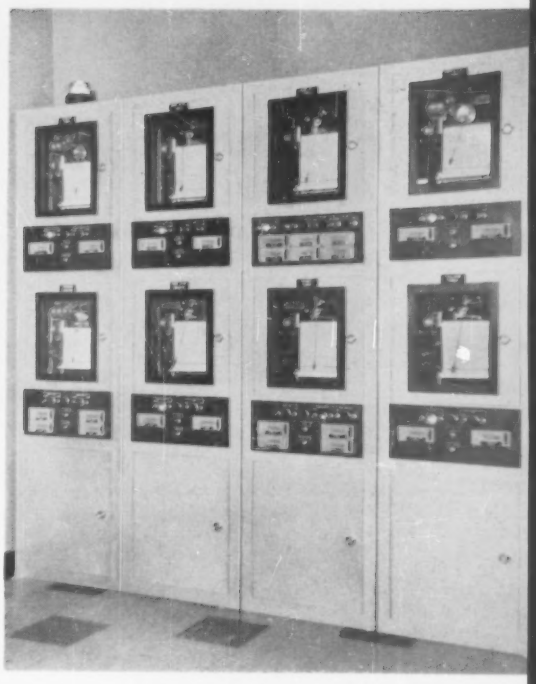
4. Manual start and stop switches on the master control panel to permit manual operation of any pump.

5. Operating lights on the master control panel to indicate which pumps are in operation and red signal lights to signify trouble at any pump or storage facility.

Signals are transmitted over leased telephone lines, and the system is so constructed that the

* Mr. McCann, manager of the Lakewood Water District, Tacoma, Wash., since 1953, was one of the original commissioners elected in 1945 when the district first incorporated.

Lakewood Water District's office staff and manager pose in front of the new office building.



This system of controls saves the Lakewood Water District about $5,000 per year in labor costs and provides valuable information.

leased line is tested automatically every 60 seconds. We are particularly happy about this feature as well as about the fact that the entire system is comprised of equipment that does not incorporate into its operation electronic features that require a technical service man to make adjustments or service the unit.

Besides saving on operating costs, this equipment provides information that enabled us to make various system improvements resulting in an insurance classification drop from Class 6 to Class 5.

Earlier cost-saving steps made it possible to lower our rates in 1954. The latest innovation is helping us maintain these reduced rates.

In 1952, when the cost of service connections began increasing, the commissioners authorized the district to make its own connections. Since then our crews have completed over 3,600 connections without any increase in charge to the customer. We installed 500 services in 1959.

Rising costs resulted in further action in 1954. In that year we started installing our own mains, putting in over 40 miles of them.

The district constructed a new office building on a three-acre site in 1952 and enlarged it 50% in 1955. The site also contains one of the larger wells, a storage yard, truck and work sheds and a meter shop. We are 100% metered, principally with Rockwell meters.

Personnel consists of eight women in the office, a work crew of eight men under Superintendent Gordon Kempo, and the writer. Two new sensimatic bookkeeping machines with built-in typewriters, which speed up our entire accounting operation, have just been placed in service. Our outside equipment includes a business coupe, four Dodge pick-up trucks, a four-wheel-drive Dodge power wagon, one Dodge flat bed (a 1½-ton truck), one Jeep and a Fordson industrial diesel tractor with Sherman hydraulic digger and Wagner backfilling blade.

Our wells vary from 270 to 600 feet in depth and have a combined capacity of 15,500 gpm. Contracts for drilling two new deep wells in previously tested aquifers were awarded on October 26, 1959 to the L. R. Gaudio Well Drilling Co. These should add at least another 2,500 gpm, increasing our pumping capacity to 18,000 gpm. With the drilling of these new wells, Gaudio will have completed twelve gravel-packed wells for the district, using Johnson Well Screens. During the fall, winter and early spring months daily pumpage averages about 2,000,000 gallons but in the summer this increases to 10,000,000 gpd; with a number of days exceeding more than 15,000,000 gallons. To date we have not restricted sprinkling.

Rates established in 1954 (when they were lowered) start at a monthly minimum of $2 for 800 cubic feet and range upward to $11.24 for 10,000 cubic feet. All water in excess of 10,000 cubic feet costs 6 cents per 100 cubic feet.

New main extensions are paid for by property owners and developers, and installed by the district with terms granted under recorded mortgage agreements. Interest is not charged provided the terms are fulfilled.

The Lakewood Water District is a municipal corporation. The Treasurer of Pierce County acts as our treasurer and dispersing officer.

We have three commissioners who are elected bi-annually to serve for six years; they represent a district of some 34,000 population, south and immediately adjacent to the City of Tacoma. Our president is Oliver Malm, an attorney for the Weyerhaeuser Timber Company, and the other two commissioners are Harold W. Gloyde, president of the United Mutual Savings Bank in Tacoma, and Charles McCullum, vice-president of the Puget Sound National Bank of Tacoma and manager of the Lakewood Branch.

Three Galion graders operate in offset sequence to clear half the street in one pass.

Racine Tests Snow Program

The Wisconsin city, crippled for days in 1947 by a 15-inch snow, dug itself out of a heavy 1959 fall in 24 hours

By **HENRY A. NELSON**
Commissioner of
Public Works

Until January 1947, when 15 inches of snow and high wind velocities produced blizzard conditions and havoc, Racine, Wis., believed that it had adequate protection against winter hazards.

When the big storm hit, the department of public works started plowing with its three heavy-duty trucks with plows, several light-duty trucks with plows, two tractors with V-plows and two material loaders. In a very short time, the department learned that its snow fighting program and its equipment could not cope with the drifts.

Operations continued around the clock, with priorities given to keeping main arteries and bus routes open to traffic.. It was several days before residential areas were plowed out. Severe criticism resulted, and the public demanded to know why the streets had not been cleared sooner. The only answer, a disquieting one, was that the department of public works was neither adequately manned nor equipped to handle a large-volume snow-control operation.

Fortunately, during those anxious days no tragedy arose, but the city had learned a valuable lesson. The one safeguard against a repetition was expansion in public works manpower and equipment. Immediate enlargement was financially out of the question, but under the leadership of two progressive aldermen who sparked the program, a trend to expand the department of public works developed. During the past few years, funds for needed equipment have been provided in the budget of the department.

It was not until 1959 that weather conditions provided a test for the revamped, revitalized and better-equipped department. With newspapers heralding the "worst snowstorm since 1947," and with six inches of accumulated snow already cleared from city streets, the new storm moved in.

By this time, the department could muster five Galion graders, four heavy-duty, 4-wheel-drive trucks equipped with angle plows, two tractors with V-plows, eight heavy-duty trucks with reversible plows, six light-duty trucks with reversible plows, seven sand spreaders and three salt spreaders. For the snow-removal operation, a Bros Sno-Fighter and an Adams Traveloader were held in readiness.

Under a predetermined plan of operation, graders were sent out immediately on main streets, con-

Keeping 14 trucks busy with an 8-block dumping-area radius was the job of the Bros Sno-Fighter on a 7-ton Walters truck.

An 11-foot, reversible Good Roads snow plow, mounted on a CO-190 International five-yard dump truck goes to work.

— — and Equipment

centrating first on state highways; sand and salt spreaders were dispatched into mapped-out districts, taking care of hills, stop-and-go intersections, arterial stops, business areas and school zones. Spreaders also followed behind graders and plows, holding icy traffic hazards to a minimum.

When the snow had accumulated to three inches (plowable), the 20 plows were dispatched into designated districts to plow main arteries and bus routes, followed by residential streets and alleys.

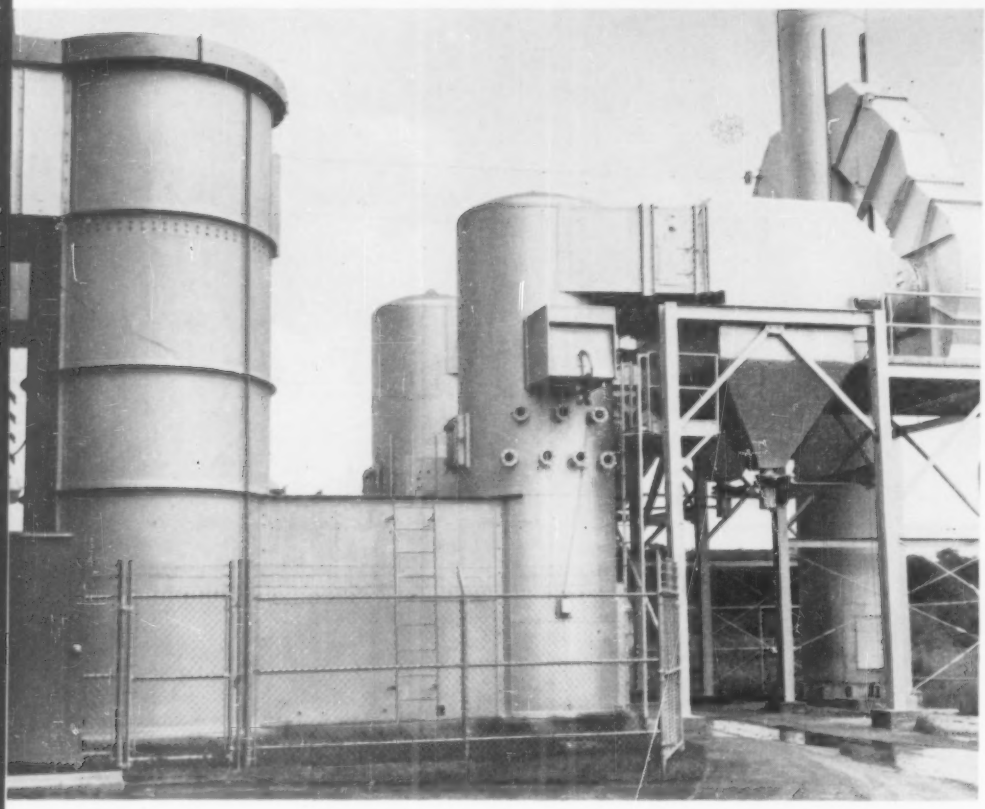
The operation continued until all streets and alleys had been plowed after the end of the snowfall and all were clear.

In this storm, 12 inches of new snow fell, but all streets had been plowed clear within 24 hours after the first flakes. Depending upon the length of the storm, and the amount of snow, the streets are usually plowed two or three times per storm.

With plowing under way, snow removal moved into high gear, starting at midnight following the end of the snowstorm. The Sno-Fighter and Traveloader attacked windrowed snow in the business areas, main arteries, and narrow secondary streets. Since the department had all available equipment plowing or spreading sand and salt during the first 24 hours, 28 privately-owned trucks were hired to haul snow removed by the loaders. As plows were released from designated areas, city trucks replaced hired trucks serving the loaders.

"White wings" cleared sidewalks in business areas with three front-end loaders assisting, first in these areas, then at the bus stops.

We have now met and handled the first large snowstorm in 12 years. Indications are that our well-equipped, well-manned department of public works is equal to any job it is called upon to do. As for the 1959 storm, it is behind us, and from all reports it was a job well done.



All equipment beyond the ignition chamber is outside the building proper. From left to right: secondary combustion chamber, gas-cooling chamber, fly-ash collector and induced-draft fan.

Placing the charging gates above the floor permits easy access for servicing and repairs.

Belmont, Mass., Incinerator

Spray control and pressure-sensitive damper vary with load to maintain peak collector efficiency

By JOHN L. HAYDEN*

At first glance the Belmont, Mass. incinerator looks no different from most others of similar size or capacity. Incoming refuse is dumped into a storage pit, transferred by crane to the charging hoppers, burned, the residue quenched and dropped into storage hoppers below the furnace and finally hauled away for disposal. Gaseous products of combustion, fly ash, unburned volatiles and water vapor pass into the secondary chamber where combustion is completed.

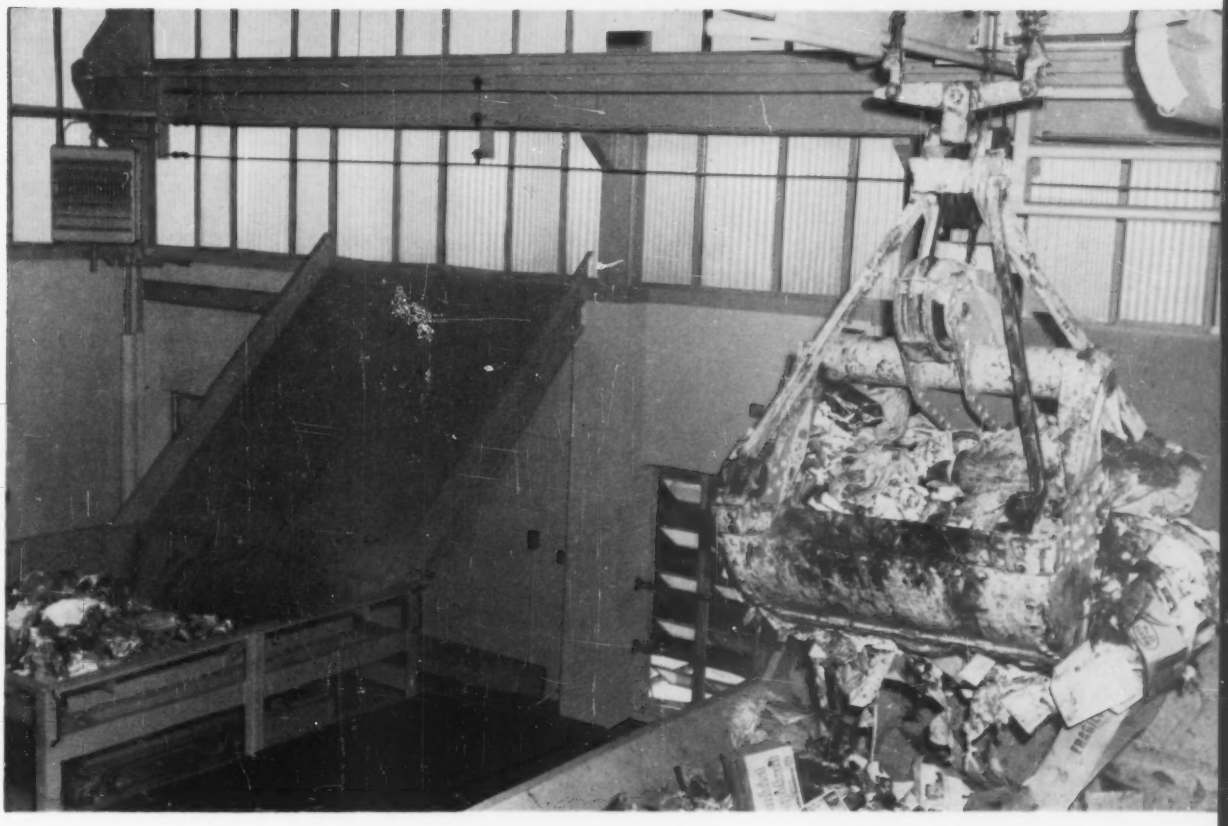
Up to this point the design is not unusual, but beyond the secondary chamber we have incorporated several features that you don't find elsewhere and that insure that the incinerator will be a good, fly-ash-free neighbor.

A stack discharge free from fly ash is especially important at this installation, for Belmont is an all-residential community in the Boston metropolitan area. For the most part it consists of expensive homes and includes several state institutions.

Fly-Ash Control

The gases leave the secondary chamber at approximately 1800°F, and pass into a gas cooling chamber where they are cooled to 650°F by finely atomized, thermostatically modulated water sprays. The cooled gases pass upward through the spray chamber at about 17 feet per second (precluding the possibility of droplet carryover) and enter a centrifugal type collector which removes over 99% by weight of all

* Mr. Hayden is the president of Hayden, Harding & Buchanan, Inc., of Boston, Mass.



Gives Complete Fly-Ash Control

entrained matter and 90% of all entrained dust and ash particles (by number) larger than 0.0002 inches in diameter, which is below the limit of visibility with the naked eye. Over 98% of all visible particles are removed. Large induced-draft fans discharge the cleaned gases through a single steel stack extending only 20 feet above the roof of the building.

A barometric-pressure-sensitive damper in the furnace flue admits air at all operating conditions less than full load, thereby maintaining peak collector efficiency and minimizing cooling-water consumption.

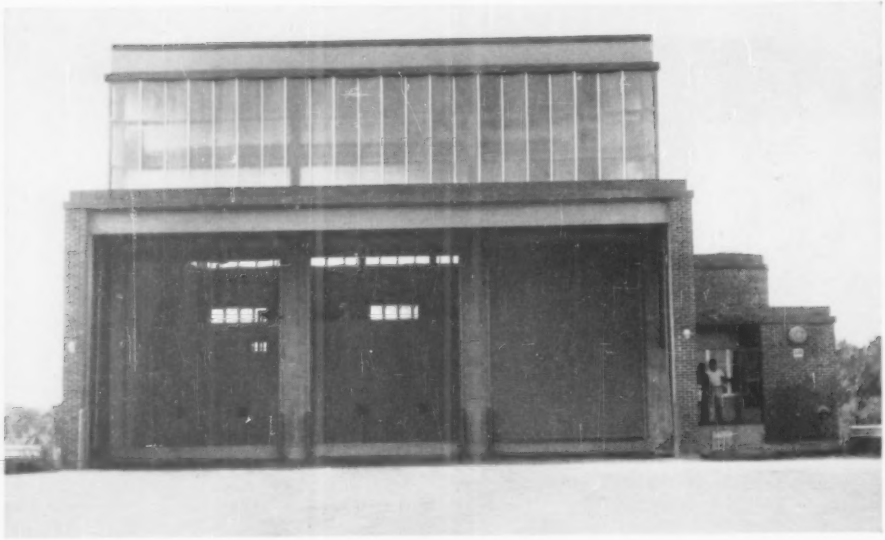
Of particular interest is the spray control system which follows the load with no appreciable deviation from set point and is "fail-safe" throughout. Each cooling chamber contains an upper and lower bank of sprays. The lower bank is designed to carry full load, with nozzles designed to produce a constant spray pattern over a pressure drop of 7.5 psi to 100 psi.

Pneumatic Thermostat

A pneumatic thermostat with a 4-second response, located at the inlet to the induced draft fan, signals the pneumatic controllers on two separate proportional regulating valves that control the upper and lower spray banks. Under normal conditions only the lower spray bank operates, with the upper bank held in reserve for some unusual condition. As the heat increases the valves open to allow more cooling water to pass through the sprays, and as the heat decreases, the valves close to reduce the quantity of water. Under normal conditions, about 20 gpm of water is used per unit along with air cooling.

The system includes several safety features. When the temperature at the entrance to the induced-draft fan drops below 500°F, all water shuts off to prevent flooding in the cooling chamber, and the fan goes on low speed. Should the temperature at the entrance to the fan reach 750°F (likely to happen in case of low water pressure), a four-foot-square gate in the combustion chamber opens allowing hot gases to spill out to the atmosphere.

At the same time the unit with its associated fans is shut down, and a counterweighted damper in the induced-draft-fan discharge closes, preventing the hot gases from passing through the spray chamber, dust collector, and fan, thereby protecting the equipment from excessive heat. The system is also equipped with additional instruments to actuate the emergency damper immediately upon loss of hydraulic pressure for



Glass and plastic walls provide a well illuminated charging and stoking area.

added protection against a temperature overrun due to thermal lag.

Upon second glance the observer will also notice a difference in external appearance from other installations. All equipment beyond the ignition chamber is located outside the building proper resulting in very substantial building economies. The colonial brick architecture of the building is in harmony with the New England tradition of the Town of Belmont. William Hoskins Brown Associates of Boston served as architectural consultants on the building.

The receiving pit, 42⅔ feet long, 16 feet wide, and 22½ feet deep, provides dumping space for three trucks at one time. A single three-ton P & H crane with 1½-yard Blaw-Knox bucket transfers the refuse to the two furnace hoppers.

Each of the two Morse-Boulger cylindrical furnaces has a capacity of 75 tons per 24 hours. Inside diameters are: ignition chamber 9⅔ feet; combustion chamber 7¾ feet; and spray chamber 6 feet.

Another item of interest is the electric-motor-operated Beaumont Birch charging gates. These are mounted above the charging floor to provide easy access for servicing.

Instrumentation includes elements by Minneapolis-Honeywell, Partlow, Bristol, Hagan Chemicals and Controls, and Ellison.

Morse Boulger, Inc., supplied the gas and cooling (or spray) chambers and Hagan Chemicals and Controls furnished the multicyclone fly-ash collectors.

The basic design of the auxiliary units (induced-draft fans, stack, spray chamber, water requirements, and similar items) was based on refuse comprising 90% rubbish and 10% garbage with a 25% overall moisture content, and 12.5% inert material. Heat values were estimated at 8,000 BTU per pound of combustibles and 5,000 BTU per pound as fired. Sizing of the auxiliary units was based on a maximum burning rate of 85 pounds of design refuse per square foot of grate area.

In selecting total plant capacity, we took into account the maximum possible growth of the town, utilizing all available land. Belmont now has a population of about 34,000 people, with potential growth for a maximum possible population of 40,000 persons.

The plant is presently burning between 32 and 38 tons of mixed refuse a day.

Test Results

The specifications required that no smoke of a density greater than No. 1 Ringleman be given off for more than three minutes. During a 244-minute test period, in which 35,100 pounds of refuse were burned, smoke density exceeded No. 1 Ringleman for only four minutes, with the longest period during one hour (but not a continuous period) amounting to only 1½ minutes. The longest continuous period during the test was 30 seconds.

The test data showed:

Time—244 minutes
Refuse burned—35,100 pounds
Burning rate—4.33 tons per hour
Design rate—3.13 tons per hour
Total ash and noncombustibles:
Ash hopper—10,550 pounds
Combustion chamber, flue and spray chamber—232 pounds
Fly ash hoppers—220 pounds
Total—11,002 pounds.

Construction got underway after an aggressive incinerator committee, led by Walter T. Anderson, Chairman, broke a ten-year deadlock on the project. Joseph W. Kales, Town Engineer, was ex-officio member. Responsibility for operation rests with Superintendent of Streets George B. Olson, also a member of the committee.

The total cost of the plant, exclusive of land, came to approximately $630,000. It occupies a 16-acre site purchased from the Commonwealth of Massachusetts for $1—an outstanding example of town-state cooperation.

More 2-Way Radio For the Capital

The District of Columbia is making a major addition to its existing communications system. New equipment for the D. C. Department of Highways includes two General Electric 330-watt base radio stations, six desk-top stations, and 125 mobile radios in low band, high band and 450 mc. Under an earlier contract, G-E supplied 111 Progress Line mobiles for use in ambulances, fire vehicles, police cars and maintenance vehicles.

Pick the Right Job Title

. . . and assign it proper and equitable duties and watch personnel efficiency rise

By NICHOLAS SOKOL*

We can be reasonably sure that a growing community, faced with the problem of building and maintaining more and finer streets, will be extremely careful in drawing complete and accurate specifications for its street-maintenance equipment. The community should be just as exacting when setting up and clarifying the job requirements for the best man to operate this equipment. The basic principle in personnel management of "the right man in the right job" is just as important as the basic operating principle of "the right machine for the right job."

In order to establish equal pay for equal work, one must first identify each position and then determine which ones are on a comparable level. When positions are classified and job descriptions are completed, it then becomes possible to compare titles both within the jurisdiction and within other communities in order to assign them to their proper levels of responsibility and authority. Job classification also assists administrators in their organizational planning and financing. By determining relative values for personal services, fiscal authorities can establish equitable salary rates. The use of meaningful titles helps legislators and administrators to evaluate fairly the salary or wage to be paid to each position in the community.

First, impartiality and complete objectivity are basic in reviewing the duties and responsibilities of each position. Employees often become apprehensive of the process of position classification simply because its objectives and methods have not been explained to them in advance. One must emphasize that the purpose of the survey is not to find out how well or how badly an individual is performing his job, nor to reduce the number of employees or their salaries.

Fact-Gathering

The next step is fact-gathering about the positions that exist in the jurisdiction. The most desirable way to obtain these facts is from the employees themselves. This information may be obtained through personal interviews but often it is costly, time consuming, and may require far more trained interviewers than can be made available. The more widely accepted technique is the use of a position-classification questionnaire. A questionnaire should be completed by each employee, reviewed by his supervisor and turned over to the classifier.

A word here about the classifier. This individual should be trained in the principles of classification and should preferably be a staff member of the agency responsible for the personnel administration of the jurisdiction. If such a person is not available it would be wise to obtain help from other governmental jurisdictions or from a consulting organization.

In addition, the classifier will make a "field audit" to observe jobs in their work settings. Conflicting statements may appear on questionnaires involving positions in the same department which appear to belong in the same general class title. A supervisor may take exception to some of the statements made by employees in describing their work. The classifier can solve this type best by his personal observation. Highly desirable, too, is a visit to the heads of departments to obtain from them such material as charts and diagrams showing organizational structures and relationships between subdivisions and also to discuss their staff problems as related to titles.

The next phase is the preparation of class specifications—begun only after all questionnaires have been arranged into class groupings. A class specification is prepared by consolidating all the job descriptions that have been allocated to the same class and describing the

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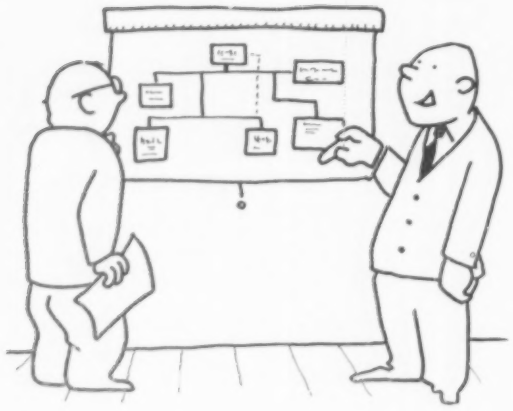
* Mr. Sokol is a field supervisor for Management Services Associates, New York.



major elements of the job that are common to all. In every class specification there are four basic parts. The first is a class title, preferably short and giving some indication of the type of work and the level or grade of the class. Second is a definition, usually in the form of a short statement describing the basic purpose of the job and making reference to the level of responsibility. Third is a sampling of examples of work and duties performed by the positions in the class. Fourth is a statement of the qualification requirements of the class, which usually contains a reference to formal education and certification requirements (if applicable to the title) and related work experience.

In addition to these four basic parts there are one or two other statements which are used by some jurisdictions. One is a "distinguishing job characteristics" paragraph which points up the specific peculiarities of the class, such as hazards of work involved, unusual hours of work, etc. It may also refer to characteristic features of the class which make it distinctive from the next higher or lower class in the same series. The other statement found in some class specifications refers to the knowledge, skills, and abilities an incumbent must have in order properly to discharge the duties and perform the tasks common to all positions with the class title.

Allocation List

As a practical matter, however, one more step remains—the preparation of allocation lists which show the name of the incumbent in each position, the class title of his position prior to the survey and his proposed new classification. It must be remembered that the allocation of positions is a distinct action from the formulation of the classification plan and that the agency having the authority to take these two actions may not be the same. For example, the local civil service commission might adopt and maintain the classification plan while the community's top administrative or personnel officer would authorize the allocation of positions as an administrative action.

The establishment of a salary or wage plan is a separate action from the process of position classification. From the standpoint of employee morale, the classification plan should be implemented with an appropriate and sound pay plan. Generally, a good technique is to place the classes of titles in schematic arrangement according to their relative levels of worth.

Need for Up-Dating

In closing, a word of caution. As already indicated, a classification plan must be kept up to date.

For this reason, provision must be made for frequent review of work assignments. This can be done, in part, by checking vacancies as they occur and by making certain that every new position is properly classified. Beyond this, there should be a continuing review of the classification plan by the personnel administrator, including spot checks of individual positions to determine any change in duties and responsibilities, checking with department heads as to new plans or programs resulting in material changes in the duties of present positions and reviewing personnel changes.

Miami City Employees Learn Safe Driving

A plan to make some 4,400 City of Miami employees more careful drivers and to save tax dollars on reduced accident insurance premiums has been inaugurated as part of the city training and safety program.

The plan, under direction of Frank J. King, is the latest phase of a continuous safety course instituted in 1956 by the Miami Commission and City Manager Ira F. Willard.

Mr. King defines his instruction program as "defensive driving," which he explains as "no daydreaming, no traveling conferences and no business other than driving."

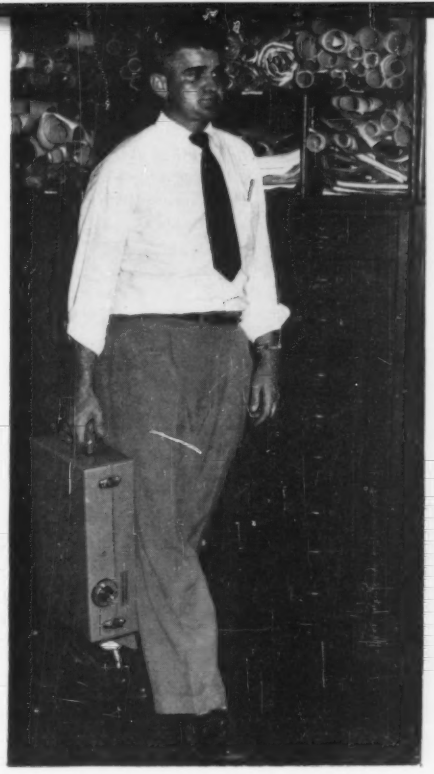
The city's accident rate dropped as a result of the training program from 4.7 for each 100,000 miles of drving in 1957 to 3.6 in 1959.

The program stresses the principal of sighting properly as the best way to avoid driving accidents. Its five tenets are: aim high in steering; get the "big picture;" keep your eyes moving to avoid blank or fixed stares; leave yourself an out by not following too closely; and make sure you are seen by other drivers through horn blowing or blinking of lights.

Another vital segment of the overall program is the part played by the Miami Accident Review Board. The seven-man board, which includes the supervisor of the department involved, investigates and judges all city accidents.

In the fiscal year which ended June 30th, the board reviewed 354 accidents and questioned more than 20 city drivers who were involved in them. It came up with the following summary: unavoidable accidents, 162; chargeable, city driver at fault, 119; not chargeable, 79.

The panel ordered 35 letters of reprimand, four mechanical tests of driver skills, 15 traffic school terms and three employee suspensions.



Left—The author carrying the photocopier from one office to another.

Right—Secretary E. Hazel Healey reproduces, for the information of individuals involved, a section of the benefit map which shows the properties directly benefited by a new sewer project.

Photocopies Valuable to Greenwich Public Works Department

By D. F. JANKOVICH*

In our Public Works Department, map sections, material from bound volumes and periodicals, and charts are photocopied and included in field and reference reports. These photocopies, together with detailed written summaries, allow us to make up complete packages of information invaluable in field work.

Francis J. Perna, our Assistant Commissioner of Public Works, began an investigation of photocopy machines in 1954. Many photocopiers were demonstrated, and Mr. Perna decided on the Contoura-Portable, made by F. G. Ludwig, Inc., Old Saybrook, Conn.

Before we purchased this machine, tracings of a map section had to be made and sent out to a printer for reproduction. Only in this way could we provide small detail maps and avoid cutting valuable area maps which measure 2x3 feet. The 24- to 48-hour delay involved amounted to a four-day loss, since other jobs are always picked up during those hours.

Now we merely place the plastic air cushion on the map section to be reproduced, expose the negative, and turn out a photo-exact copy in seconds. To reproduce from a bound volume, the plastic air cushion molds to the contour of the book. We no longer accumulate stacks of books and periodicals as information contained therein can now be photocopied and placed in a bound folder against the time when needed.

Because of the expense and delay in getting copies traced and printed, we often omitted much information from our reports. Present reports are more informative. For example, those involving drainage work in conjunction with the Connecticut Turnpike are more immediately useful because we were able to attach a draft or explanation from a specific publication

Reproducing pages from books and periodicals is now done in seconds.

* Mr. Jankovich is an engineering assistant in the Department of Public Works, Greenwich, Conn.

rather than merely listing the publication as a reference.

Ninety percent of my work is concerned with buying of property and obtaining easement rights of way for all public works improvements, such as roads, sidewalks, drains, and sewers.

The plans for improvement are produced on sheets larger than the standard 8½ x 11 or legal size paper, and it would be impracticable to prepare duplicate plans to send to property owners affected. However, these plans are easily photocopied and this copy is attached to an explanatory letter so that each individual concerned has the information he needs for complete understanding of the project. Giving property owners this information in detail helps them to understand our problems and our intentions.

Preliminary Maps

Preliminary sketch maps are prepared by myself and a consulting engineer. Later we reproduce sections of the master which are in turn sent to the individuals concerned with specific areas. We thereby eliminate the expense of having the consulting engineer prepare many duplicates (I recall one sketch concerning a drainage system which would have required 15 duplicates). If individuals agree to the proposed plan as explained in detail in the letter and accompanying photocopy, final construction maps are then prepared by the consulting engineer.

The Contoura photocopier is also used by the Greenwich Division of Sewers, Division of Parks and Trees, and the Highway Division, as well as the Planning and Zoning Commission.

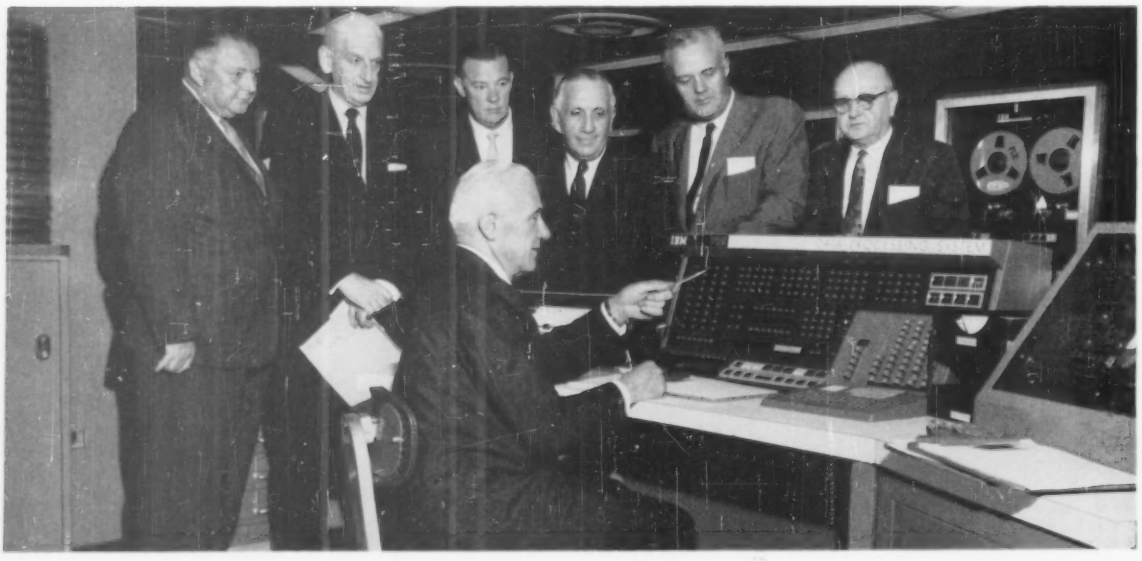
1,000 City Paychecks a Minute

Sixteen officials of Chicago and Cook County, Ill., flew to New York on September 10, 1959 to inspect the powerful electronic data processing system which prepares New York City's huge municipal payroll at the rate of 1,000 checks a minute.

Representatives of the City of Chicago were: Sidney Deutsch, treasurer; James Jardine, commissioner of water and sewers; Lt. Edward Erickson, chief of the police department's bureau of criminal investigation; C. E. Humphrey, deputy executive director of the Chicago Housing Authority; Paul N. Zimmerer, director of research; Edmund P. Curry, deputy treasurer; Donald W. Hill, assistant to the general superintendent of schools; William Cochran, assistant budget director; Chief Robert O'Brien, fire department.

Cook County officials were: Lee Howard, auditor; Edmund Brennan, director of central services; Ernest Marohn, director of procedures; T. McCracken, administrative assistant, assessor's office; J. Ronan, administrative assistant, treasurer's office; Andrew Plummer, administrative assistant to superintendent of highways; Roland W. Erickson, assistant county auditor.

The system uses magnetic tapes to store and print information on 130,000 bi-weekly, 20,000 weekly and 40,000 monthly payroll checks. It is said that savings will amount to a half-million dollars a year. Operating at electronic speed, the International Business Machine 705 computes an employee's gross pay, withholding tax, Social Security, pension contribution, health insurance plan and deductions such as union dues. Recently the city was able to include U. S. Savings Bond Plan deductions in the payroll operation for the first time because of the computer's abilities. Payroll information is printed for the controller's office at the rate of 25 lines a second.



New York City Controller Lawrence E. Gerosa, at console of IBM 705 computer, discusses New York's automated municipal payroll with, left to right, James Ronan, Cook County Treasurer's office; Edmund P. Curry, Chicago deputy treasurer; James Jardine, Chicago commissioner of water and sewers; Sidney Deutsch, city treasurer; Edmund Brennan, Cook County director of central services; and Lee Howard, county auditor.

Aerial Platform Emerges as New Fire Fighter

Fast and flexible for streams and rescue and safe for the firemen

Firemen use water streams from fire hose lines and from the Pitman retractable platform in Chicago.

Chicago's purchase and modification of a tower or aerial platform truck to make it a fire fighter is more than an interesting incident. It marks the emergence of a new fire apparatus. The manufacturer of the service truck had already visualized a fire-fighting future for its "Giraffe" and the modifications made by the Chicago Fire Department have been incorporated in a fire-fighting model now on the market.

Just five years ago, the Pitman Manufacturing Company, Grandview, Mo., began to manufacture and sell aerial platform equipment. The first was the "Giraffe," with a 40-foot working height. At the time the company had two artist's drawings made visualizing the Giraffe as a piece of fire apparatus. The company took a commercial Giraffe demonstrator, mounted on a commercial truck, to the International Association of Fire Chiefs Convention in Houston in 1954 and to the Omaha Convention the following year. On the basis of interest and comments it was decided to shelve any further promotion of the Giraffe in the fire-fighting field until it was re-designed.

After re-design and further testing of pilot models, the Pitman Aerial Platform, now known as the Snorkel, was offered in July 1958.

Active promotion and sale of the machine got underway in 1959. Demonstrator machines of 65-foot working heights specifically designed for the purpose of fire-fighting appeared at the IAFC Convention in Grand Rapids this year. The machine purchased by the Chicago Fire Department received a great deal of publicity from the Chicago papers. It is a standard Pitman aerial platform model 50-HD which was ordered by the company's Chicago distributor, the Illinois (FWD) Truck & Equipment Company, as a demonstrator tree-trimming aerial platform. When the Illinois (FWD) Truck & Equipment Company ordered this machine they had no idea at all that it would ever go into use as a piece of fire apparatus. Modifications necessary for transmitting water to the platform were made by the Chicago Fire Department. These modifications which will be applied to future models include:

A means for passing water from an outlet at the base of the machine up through the center post and inside the booms, piping a 3½-inch line of water up to the platform.

A means to vary the speed of the machine from both the operator's platform and ground control station, allowing the operator to control all movements of the machine as fast or slow as required.

A power take-off from the truck transmission and an emergency source of power in the form of an auxiliary gasoline engine.

Either boom, or both, can be operated simultaneously; this will allow the operator to move straight back and forth, straight up and down, through any angle or through any arc and be revolved at the same time.

The Chicago Fire Department purchased their first Snorkel No. 1 from Pitman and put it into service October 14, 1958. By June 2, 1959, it had fought in 246 fires for a total of 247 hours and 20 minutes, actual time in operation.

The fireman in the platform of this machine is much safer than a fireman on a ladder, and by being able to control his position from the platform, he knows where he needs and wants to be better than a man on the ground.

Polysulfides Serve the City

Physical characteristics of polysulfide sealants find increasing application in street, water, sewer and structural departments

Polysulfide sealants, until recently used principally in curtain-wall and structural sealing, are currently finding application in sewage purification plants, water reservoirs, flume projects, power stations, and even in airport runway and street construction.

This relatively new product is a viscous liquid that cures to a rubbery material at normal working temperatures — without shrinkage— and remains firm and rubber-like for long periods at temperatures ranging from −65°F to 275°F.

Within these temperatures the polymer maintains high-strength adhesion qualities in bonding metals, glass, wood, plastics, concrete and masonry products as well as other materials. Its rubbery, "live" structure is apparently unaffected by ozone, oxidation, sunlight and weathering, and is highly resistant to solvents, oils and many chemicals.

Perhaps as important is its property of elongation. Tensile adhesion of polysulfide expansion-contraction joint sealants on one airport runway application was rated by test at 45 psi at 75°F, with a 250% ultimate elongation. Thus, a ½-inch joint could open to 1½ inches with no loss of sealing properties and without loss of sealant material due to "free" joint filler.

Municipal applications demonstrate that the sealants (most of them are based upon liquid polymer made by the Thiokol Chemical Co., Trenton, N. J.) stand up under the most rigid performance specifications. The new 11,000-foot runway for jet aircraft, now under construction at New York's International Airport, is an example. Military specifications were used. They call for a softening point higher than 300°F, solubility of less than 2% in any of the commonly available solvents, tack - free condition in less than 10 minutes after application and resistance to either melting or burning at 500°F. These, plus the elongation and adhesion requirements, narrowed the field to a few materials. The joints consist of pre-formed cork filler eleven inches wide and one inch thick. Designers expect the pressure-placed topping of polysulfide sealants one inch square in cross section to perform satisfactorily for ten years without maintenance.

Another job-designated application was the sealing and weather proofing of the 316-foot-diameter aluminum roof dome over the City of Las Vegas' new $6,000,000 convention center. The dome, the focal point of the center, is formed of 16 steel trusses and is constructed of 0.040x4-inch corrugated Reynolds aluminum. More than 1,000 square aluminum units were used, and cap-sealing the roof fasteners presented several problems caused by the temperature ranges of the desert.

Again, the unusual properties of the sealant—this time, an aluminum-colored Thiokol-based polysulfide sealing compound produced by the Presstite Division of American-Marietta Co.—seemed the most logical material.

A total of 75,000 roof fasteners were cap-sealed over the entire bolt and edges with the sealant. The sealing job was done during the summer, so application had to

Operator of Semco Pneumatic Sealant Gun cap-seals one of 75,000 fasteners in the aluminum roof of the big Las Vegas convention-center dome.

Las Vegas' new $6,000,000 convention center has a polysulfide-sealed 316-foot-diameter dome which presented a lot of problems.

be performed during periods when temperatures soared to 125°F. The sealant therefore was shop-mixed, packed in disposable cartridges and refrigerated to prolong work life. It arrived on the roof in a chest of dry ice. The cartridges were placed in a Semco Sealant Gun for immediate application.

Reservoir Sealant

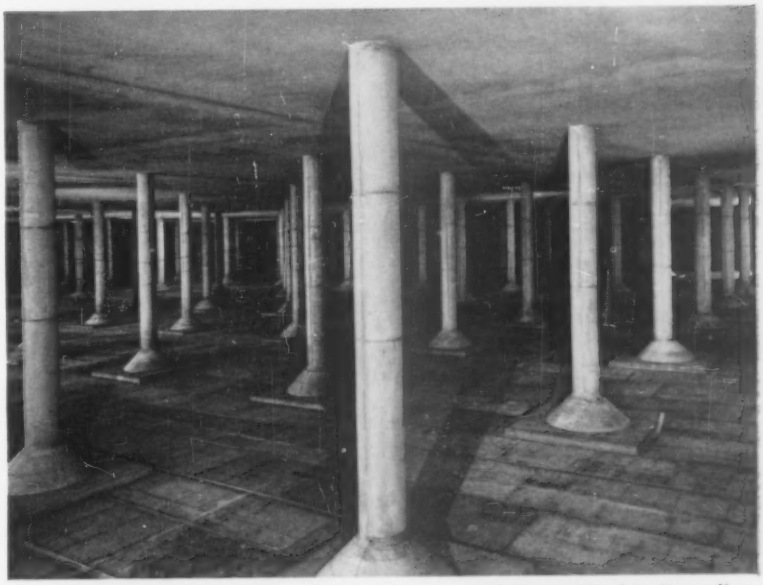
A two-part polysulfide compound, used in sealing expansion joints of the Newmark Reservoir, San Bernardino, Calif., has eliminated joint-maintenance costs over an unprecedented period, according to a report from City Water Department Engineer L. A. Hosegood.

Actual installation of the sealant was made in August 1955, and periodic inspections since that time have revealed no failures in the material, and little or no leakage. Mr. Hosegood terms the material "as good as the day it was installed."

The sealing compound selected for the Newmark Reservoir was PRC expansion joint sealant, manufactured by the Products Research Co., Los Angeles, Calif., based again on a liquid polymer. The polymer, mixed at the job site with an accelerator (curing compound that consists of lead dioxide, stearic acid and dibutyl phthalate) was gunned into expansion joints and hairline cracks that had been first cleaned and then primed with PRC primer.

A 20-million-gallon reinforced concrete reservoir at Ontario, Calif., recently has been completed with the use of a compound produced by the Chem-Seal Corporation. In this sealing procedure, one man handles the mixing of the two-part compound, using low-speed mixer, like a conventional paint mixer.

In the Ontario job, two types of sealants were specified. One mix was required for the level joints in the reservoir floor and another, a more viscous mix, was used in slope joints to avoid flow during application. Following priming—a necessary operation in concrete sealing—the mixed sealant was applied by conventional pouring cans, modified with the addition of a pouring spout.



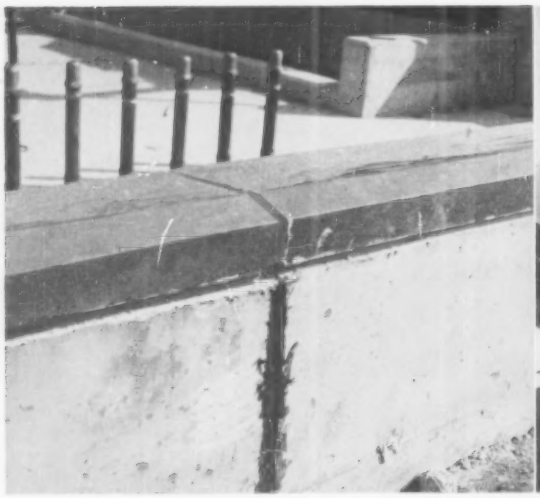
The polysulfide sealant in the joints of the Newmark Reservoir, San Bernadino, Calif., is apparently unaffected by four years of water storage.

About 2,250 lineal feet of both level and slope joints were completed per day, using as many as three men on the pouring crew.

The Chem-Seal sealant used in the Ontario Reservoir provided a designed average work life of four to five hours compensating for extremely high temperatures within the reservoir during summer months when the application was made. It set up completely in slightly over 24 hours, forming a tough, durable, adhesive water-tight seal.

Polysulfide material (a compound made by the Minnesota Mining and Manufacturing Co.) also was used for curtain-wall sealing in the new City of Long Beach (Calif.) Memorial Hospital, where the constant motion of window joints due to high winds and rain and exposure to changing temperatures created a difficult sealing problem.

At Charlotteburg, N. J., the City of Newark is being provided with new water treatment facilities at the Charlotteburg Reservoir Project, designed by Parsons, Brinckerhoff, Hall & Macdonald, Engineers, New York City. The engineers specified



Aerator basin in the water treatment plant at Charlotteburg, N. J. was sealed inside and out with a polysulfide sealant.

An unforeseen application—the sealant was used to seal off joints between aerator nozzle pipes and floor slab in the Charlotteburg plant.

that the joints in an aeration basin be caulked with hot paraplastic in the horizontal joints and with cold Vertiseal (a polysulfide sealant prepared by Servicised Products Inc.) in all vertical joints.

The engineers were so impressed with the inside-and-outside caulking of the vertical joints that they approved polysulfide seals for the four-inch aeration pipes, topped by Sprayco air diffusion nozzles.

Unfortunately, mere specification of polysulfide sealants could become a liability to the city official planning their use. Potential troubles stem from the relatively high cost of the polymer and a lack of understanding of the material itself.

The high cost of the sealant material—as much as $20 per gallon—must be offset by savings in maintenance costs. If an application of conventional materials normally gives long years of maintenance-free service, the substitution of polysulfides would pay few dividends. Where annual replacement of sealants is costly, these polymer-based materials should prove economical.

Specifications must be tailored to the application by citing a minimum percentage of polymer for the individual use. The greatest return for municipal dollars spent can result only from a close technical appraisal of the sealing job to be done, a careful estimate of maintenance costs and tight specifications that will best control long-run operations of the facility in question.

Heavy Emergency Pumping

When rain falls on the table-flat terrain of Hollywood, Fla., it really means business for the city's maintenance crews. Data collected by City Manager Joseph W. Watson show that each one-inch rainfall on a lot 40x135 feet deposits 3,366 gallons of water or nearly 13½ tons. With rainfall this year already totaling 63 inches, each lot has absorbed more than 212,000 gallons of rain water.

While the ground is easily able to absorb several inches of water over a period of hours without flooding, the usual tropical rain is heavy and of short duration, thus causing general flooding of low-lying areas. One rain of nearly 5 inches, for example, required emergency service from city crews, with two tank trucks, hose lines and pumps needed to pump out excessive water in an area bounded by six intersections in a busy part of town.

Tropical rains are heavy, flooding streets like this one. Portable pumping gives temporary relief; a currently planned comprehensive storm drainage program will make this relief permanent.

The equipment used to pump excess water out of city streets consists of two 1,000-gallon tank trucks; a 6-inch self-priming McGowan centrifugal pump with a capacity of 90,000 gallons per hour, powered with a 6-cylinder gasoline engine; and a 3-inch self-priming Sterling centrifugal pump with a capacity of 25,000 gallons per hour, powered with a one-cylinder gasoline engine.

Hollywood is currently reviewing recommendations of its consulting engineers, Reynolds, Smith & Hills, of Jacksonville, Fla., for its first storm drainage district. Estimated costs are not yet available. The Orangebrook Drainage District No. 1 covers about 310 acres and is in the area of the greatest difficulty with drainage.

For this particular job, liner plates were selected as the best approach to the problem of avoiding the construction of several hundred feet of sewer work.

Sewer Built to Withstand Heavy Loads

By **GERALD J. DEW** and **RICHARD D. ALBERTS**
Sewer Engineering Division, Milwaukee, Wis.

Milwaukee, like many other large cities, is planning and constructing an expressway or freeway system to alleviate the traffic problem. Much is said about right-of-way acquisition, demolition of existing structures, relocation of countless people, and construction of grade separation structures. On the other hand, the relocation of underground utilities receives little or no publicity. Yet this work is important and usually expensive. For example, the very nature of a gravity sewer system dictates expensive underground construction, much of it of necessity being tunnel work.

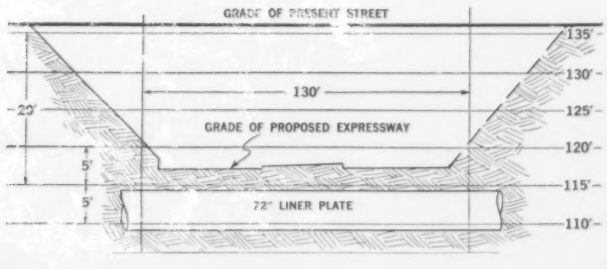
Recently, the City of Milwaukee completed another in a series of sewer construction projects made necessary by the proposed route for the north leg of its expressway system. The problem consisted of reconstructing immediately a 48-inch-diameter combined sewer at an elevation below the proposed depressed expressway. To save several hundred feet of additional sewer construction, the maximum depth below finished pavement was set at seven feet to sewer invert. This meant the top of the sewer would likely be exposed during the expressway construction, thereby calling for a sewer of sufficient strength to carry the live impact load of earthmoving equipment.

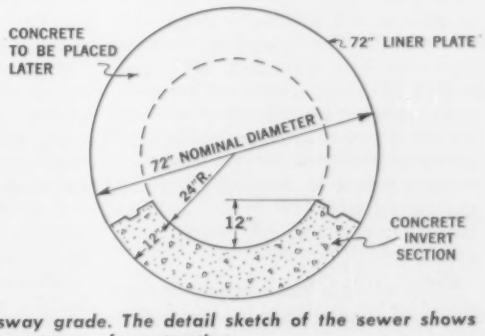
Three-Stage Plan

The Engineering Division decided to use Armco liner plates to construct a 72-inch-diameter tunnel for this 130-foot section of sewer, and to construct a concrete sewer inside it in two sections. This type of construction will withstand the load imposed upon the sewer during construction of the expressway, and if portions are accidentally damaged, plates are readily replaced.

As soon as the tunnel was completed, the invert was paved with concrete to insure a smooth surface for dry weather flow. After completion of the expressway the remaining three-fourths of the tunnel circumference will be lined with concrete to complete the 48-inch-diameter line. This last step is necessary to seal off ground water infiltration carried by the gravel lift under the pavement.

The City of Milwaukee Sewer Engineering Division designed this project with Edmund Hirsch serving as engineer in charge. The Grange Construction Company of Milwaukee did the work under the overall supervision of Walter P. Schmitz.





The sectional view of the proposed expressway shows the close proximity of the top of the sewer to the finished expressway grade. The detail sketch of the sewer shows the three stages of construction.

Removing old surfacing beyond the distressed area and trimming and squaring the area makes for a firmer and neater patch.

Bituminous Pavement Maintenance

. . . "Do's and don'ts" for better street resurfacing and repair acquired from experience in Minneapolis, Minn.

By **GORDON E. BODIEN***
City Engineer

Although Minneapolis has many kinds of pavement, most of those in service today are surfaced with asphaltic concrete. We find this an excellent material for resurfacing older pavements and a large proportion of our new jobs are designed with asphaltic-concrete surfacing on portland-cement concrete base.

A major portion of each year's paving program consists of the resurfacing of old pavements and existing concrete bases. Most of these jobs also include the widening of roadways to provide greater capacity on arterial streets. In 1954 our local transit company abandoned all street-car lines and converted to bus operation. At that time we had 92 miles of paved streets with car tracks. Pavement between the tracks, formerly the transit company's responsibility, was either cobblestone or portland-cement concrete in varying stages of deterioration. We began an extensive program of rebuilding these streets, removing tracks and ties and repaving some, and where the track structure was reasonably sound, resurfacing with asphaltic concrete. To date we have completed about 90% of this program.

After much experience we have learned many things, sometimes the hard way, regarding resurfacing of old pavements. From these lessons come numerous helpful tips such as:

1. It pays to make sure that every square yard of old pavement, or base, is in sound condition. Severely cracked or broken up areas must be removed and replaced. Minor cracks should be filled.

2. If the curb is old and requires extensive repairs, remove and replace it on the entire job. This will allow you to make minor adjustments in grades and to correct sags and deviations from the correct line.

3. Resurfacing over old one-course concrete pavements, cobblestones, street-car tracks, or brick must be at least three inches in thickness in order to give a satisfactory and lasting job.

4. It does not pay to try to resurface over a cobblestone pavement made up of soft stone such as sandstone—better to rip it up and build a new pavement.

5. Use a tack coat on all old concrete, granite block, or brick before resurfacing. Tack coat should be very thin and completely set up before laying the asphalt. Any puddles or uncured areas of tack coat will cause real trouble.

6. Fill sags in old pavement and flangeways in car tracks with leveling course and roll before laying regular binder course.

7. Best results on car tracks or cobblestone pavements will be secured by using rubber-tired rollers for compacting the leveling and binder courses. (We also use self-propelled rubber-tired rollers on the wearing course in addition to the conventional rollers).

8. In resurfacing over street-car tracks where the pavement outside the track area was surfaced with asphalt, we found that we could successfully taper the resurfacing down to meet the old asphalt by following this procedure:

(a) Apply, with a squeegee, a foot-wide strip of hot asphalt cement at the line where the new surface is to meet the old pavement. (We found that this line should be at least fifteen feet from the center line of the tracks to allow us to get the required three-inch thickness over the outer rail and also obtain the right shape on the surface.)

(b) Adjust blacktop paver to lay

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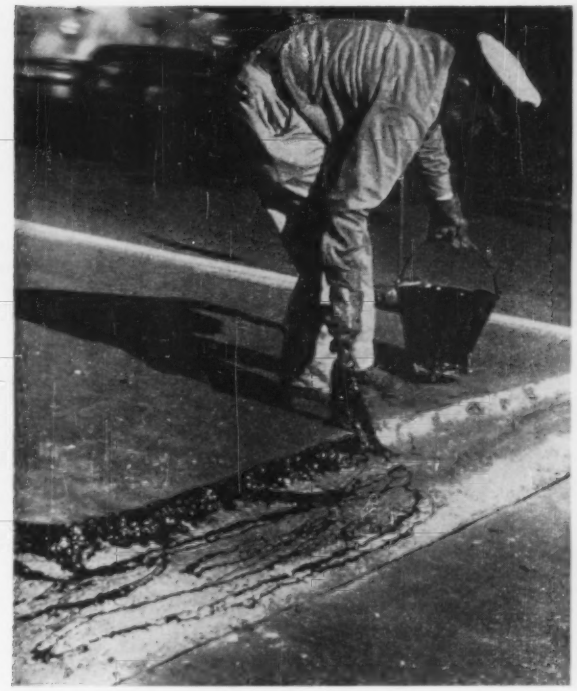
* This article is based on a paper presented by Mr. Bodien at the 1959 American Public Works Congress and Equipment Show held in Seattle, Wash.



For a tight seal, paint the edges of the patch area with hot asphalt cement.

A vibratory roller is very effective in compacting asphalt in small patches.

surface as thin as possible along outer edge.

(c) Rake out larger aggregate along edge of taper before rolling. This is a rather difficult operation requiring a raker with patience and skill but the job can be done so that one can scarcely find the joint after the seal coat has been placed over the new and old surface. On our first jobs we used a different mixture containing less coarse aggregate for the strip of asphaltic-concrete wearing course to be tapered out to meet the old pavement. We quickly abandoned this idea and went back to the regular wearing-course mix when we found that the modified mixture began to shove and rut under traffic.

Maintenance

The ideal maintenance program for asphaltic-concrete pavements would be one which permitted annual inspection of all pavements, prompt filling of cracks, repair of minor breaks that develop, and resealing of the surfaces every five to ten years, depending on traffic wear. Our budgets never quite permit us to carry out such a program of "preventive maintenance." It is really amazing how well our asphaltic-concrete pavements bear up in spite of inadequate maintenance.

Paying particular attention to some seemingly minor detail accounts in part for our successful program of patching asphaltic-concrete surfaces. We remove all defective material and then go beyond the distressed area to sound surfacing, squaring up the opening for the sake of appearance and to allow good even compaction along the edges of the patch. The edges are cut as nearly vertical as possible and are then painted with hot asphalt cement before placing the asphaltic-concrete.

We use the same mixtures for patching, resurfacing and new construction, placing and compacting the material in layers not to exceed two inches in thickness. Our experience shows small vibratory rollers to be very effective in compacting asphaltic-concrete in small patches.

The importance of crack filling should not be underestimated. This work can best be done in fall and spring when the cracks open up. The development of rubber asphalt and equipment for properly handling this material has greatly improved the effectiveness of crack control in both asphaltic-cement and portland-cement concrete pavements.

Seal coating is another item that should not be considered lightly. It's tricky business, and we have found the following precautions are important to get a good job:

(a) Do the work during warm weather. (In Minneapolis this limits our seal-coat work to the months of June, July and August.)

(b) Pavement surfaces must be clean and free from dust.

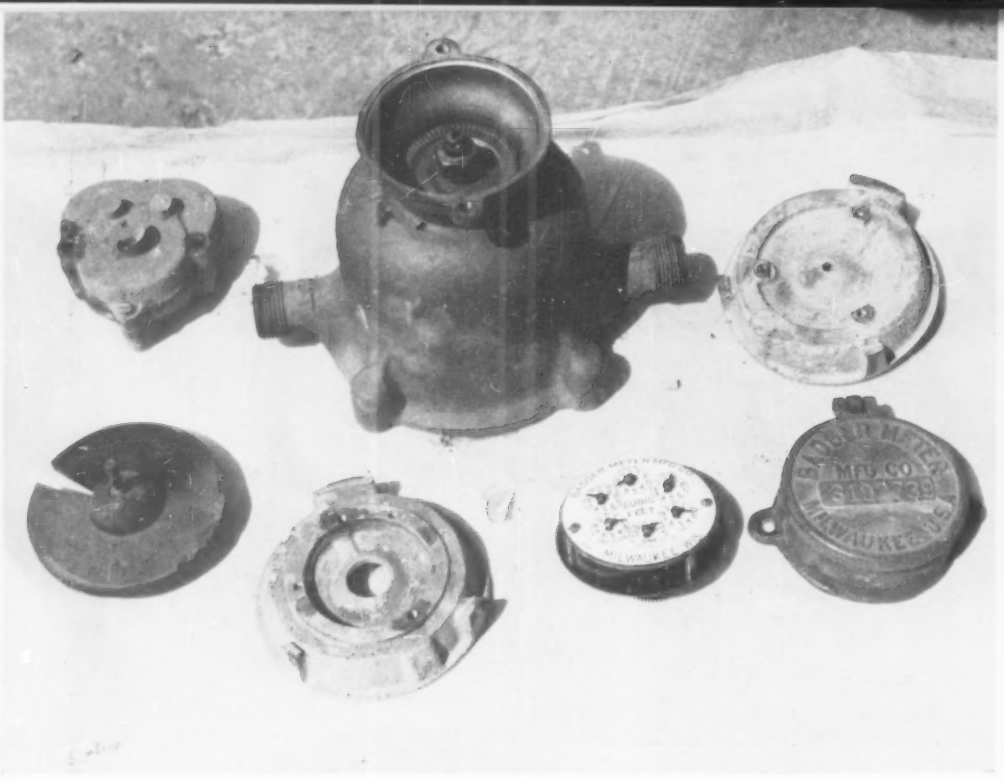
(c) Application rate of bitumen and chips must be correct and uniform. Be sure all spray heads are open and that spraybar is at correct height.

(d) Thorough rolling is important. We use only self-propelled rubber-tired rollers for seal-coat compaction.

(e) Keep traffic off completed seal until the bituminous material has set up enough to prevent damage by fast-moving traffic. (About three-hour minimum for RS-2 Asphalt Emulsion.)

(f) Sweep up excess chips the second morning after seal is completed.

These are some of the procedures followed in Minneapolis for resurfacing and maintenance of bituminous pavements—as well as tips learned in connection with this work. Some points may have been missed but we have found that all those mentioned are necessary for good results.



Left:
A Badger meter is dismantled under the routine replacement and reconditioning schedule after five to seven years of service.

Right:
Cleaned and reconditioned meter is ready for reassembly with parts that are as efficient as new ones. The meter at the upper left is ready for mounting.

Bay City, Mich., Wet-Blasts Water Meters

A better job of cleaning is only a part of the advantage—wet blasting also removes the hazard of acid handling in cleaning water meters

By **ALEX M. KRZYMINSKI**
Superintendent
Water and Light Dept.

With 18,500 water meters in service, Bay City removes and reconditions some 3,000 each year in order to count off satisfactorily the 3,300,000,000 gallons that flow through them annually. Most of them are $\frac{5}{8}$-inch units for residential use but some are larger, for institutional, commercial and other users.

Even without extraordinary water conditions that would tend to make meter maintenance a special problem, it has been found that meters should be reconditioned every five to seven years.

Bay City has selected Techline Liquamatte wet-blasting equipment, manufactured by the Techline Division, Wheelabrator Corp., Vicksburg, Mich., to do the cleaning required for this job, capitalizing on two distinct advantages.

The acid bath method was used previously to remove corrosive deposits from the internal mechanism of meters in order to prevent unnecessary wear, to preserve the accuracy and to improve the appearance of the meters, many of which are installed indoors.

But Bay City finds that wet blasting does a better job. The new system employs a shop crew of three men. Two of them constitute a "production line" in the cleaning and reconditioning of the residential meters. One disassembles the meters and cleans them in the Liquamatte cabinet. The second reassembles them, replacing any parts that cleaning reveals are too worn to be returned to the meter assembly.

The third man works on the larger meters, performing all operations, including wet blasting.

Approximately four used meters (in average condition) are cleaned every hour. Everything in the entire meter is cleaned by wet blasting, including gears, discs, housing, bottom plate bolts, nuts and screws.

The thorough scouring of the parts, inside and out, reveals any defects in parts that would render them unfit for reassembly in the reconditioned meter. Using Techline Liquasheen abrasive, the equipment brings out the bronze finish of the exterior and imparts a fine finish to the interior parts. Meters

that have been painted by householders are cleaned with an aluminum oxide abrasive at the rate of about two an hour.

In addition to the 3,000 reconditioned meters required annually for replacement, 400 or 500 are held in reserve to replace worn out ones. The city maintains an inventory of new parts which is kept up to date and replenished as replacement progresses.

Advantages

Perhaps the most important advantage in the use of the Liquamatte equipment is the elimination of acid-handling hazards. The acid corroded equipment to the point where the tub, containers and plumbing had to be periodically replaced. The wet blast stream does a more thorough job than the acid bath and wire brush scrubbing without damage to equipment or plumbing. Since meter inaccuracy is always on the slow side, substantial savings in revenue have been achieved through reliable metering of the three billion gallons of water annually.

The operator, his face shielded by the vision window of the Techline Liquamatte cabinet and his left hand and arm protected, directs the wet-blast slurry at a table load of water meter components. No acid is involved in the process.

The Tulia, Texas, power plant has served the city for the past thirty-six years. It has undergone two major expansions in that time.

Two Diesels Shoulder Power Load

With power demands in Tulia, Texas, doubled in less than six years, new dual-fuel engines are delivering 91% of the load at a 62% load factor—at a savings

By AMOS NEWBY*
Superintendent

Despite a late start among Texas cities—the Comanche Indians didn't give way to settlement of the area until 1874—rich farm land and abundant natural resources have supported solid growth and prosperity in Tulia, Tex.

And with growth came problems of providing services and facilities for the town, the seat of Swisher County, in the heart of the Texas Panhandle.

By 1911, Tulia citizens had voted to construct the town's first electric power plant, and an 80-kilowatt steam engine was installed that year.

By 1923, two 100-horsepower, internal-combustion machines had been placed into operation. Since that time, Tulia has survived two major expansion periods—during the boom of the late 20's and an accelerated program during post-World War II—when capacities actually fell short of demands and positive action was necessary.

By 1953, the plant had five engines with combined capacities of 3,890 hp. Three of them burned natural gas fuel and pilot oil. Then, in 1955, it became evident that Tulia must again increase generating capacity and the city retained Carl C. Cox, Amarillo consulting engineer, to survey needs and supervise plant expansion.

Two Dual-Fuel Units

Cox recommended the immediate purchase of a new 1,600-hp engine and an option on a second, identical unit. But a surge in demand for electricity indicated that the second engine would be needed sooner than anticipated, so the option was exercised immediately.

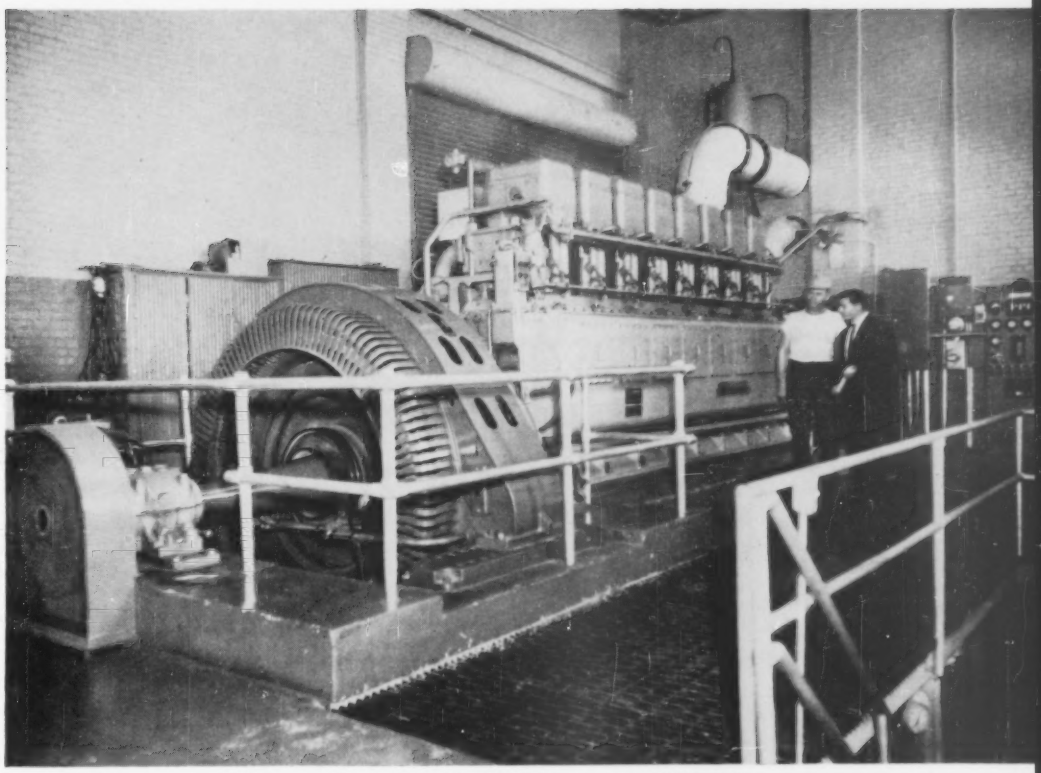
The engines chosen were 4-cycle Nordberg Supairthermal Duafuel diesels. They are 8-cylinder, 13-inch bore, 16½-inch stroke units, rated at 1,600 horsepower at 450 rpm. They incorporated a turbocharger and intercooler, providing a larger charge of cooler air for the cylinders to permit greater power output and efficiency without increasing peak pressures and temperatures. The engines operate on natural gas fuel with a small quantity of pilot oil.

Each engine drives an Electric Machinery 1,135-kw, 1,419-kva, 3-phase, 60-cycle, 4,160-volt alternator with a 15-kw belt-driven exciter. Plant voltage was switched from 2,400 to 4,160 volts when the new engines were installed.

From the day they went into service the two units have been assigned to carrying the bulk of the work load. In the first fiscal year of operation, the two turned out a combined 8,349,000 kwh, compared with a combined contribution by three older dual-fuel engines of 793,600 kwh and a trifling 1,900 kwh provided by the two remaining oil-burning diesels.

Gas consumption during this high-volume production period was 96,934,000 cubic feet, an average of 10.60 cubic feet per kwh, as compared with an average of 11.26 cubic feet per kwh for the three older dual-fuel units in the 1955-56 fiscal

* Mr. Newby started as an operator at the Tulia plant in 1926 and has played an important role in its long record of expansion and improvement. He is now Power and Light Superintendent.



The author discusses Nordberg performance with City Manager Jim White. The two units handle more than 90% of the output at 26% production-cost savings.

year. Similar economies were recorded in pilot-oil consumption.

With gas figured at 20.5 cents per thousand cubic feet and oil at 10 cents per gallon, savings really add up. The 1955-56 average cost for plant operation amounted to 3.81 mills per kwh, which was slashed to 2.86 mills per kwh during operation with the new engines. This represented a saving of 0.95 mills, or 24.9%.

The new engines turned in a cash saving of $1,600 on lubricating oil alone, despite substantially higher production. With additional savings in maintenance and supplies, the plant was enabled to produce a kilowatt-hour for just 5.6 mills (including fuel, lube, labor, maintenance, repairs, supplies and miscellaneous). This represents a 26% reduction when compared with the 1955-56 cost of 7.6 mills.

These economies were achieved by the new engines while operating at an average load factor of only 62%, with the units working at Tulia's 3,500-foot elevation.

Largest Expansion

Installation of the two engines with their 1,135-kw generating units represents the largest single expansion in plant history, raising plant capacity from 2,523 kw to 4,793 kw—a boost of 90%. Without them the plant would have run at maximum capacity to satisfy the 2,500-kw peak demands in August of last year.

The peak demands in 1959 exceeded 3,000 kw. Kilowatt-hours generated in 1958 were just about double those of 1952—and the rise is still going on.

Tulia's power plant is a profitable municipal enterprise. During the 1957-58 fiscal year, its revenues amounted to $216,286.30. The expenditures were as follows:

Production and distribution of electricity	**$82,495.90**
Payment of interest and principal of bonds	**$57,534.01**
Capital improvement—street-lighting system	**$15,000.00**
Expansion of distribution system	**$20,000.00**
To General Fund for reduction of taxes	**$40,000.00**

In addition, the plant is supplying all electricity necessary for street lighting without charge to the city.

Economic power production by the Nordbergs already has added to plant profits and their reserve capacity will allow substantial increases in electric generation at a reduction in unit cost of labor and fixed charges, as well as at a higher load factor and accompanying increase in engine efficiency.

Cleaning out weeds on the lakefront now takes only an hour; by hand it took an average of 15 man-hours to achieve the same result.

Multi-purpose Tractor Chops Cost Spiral

Pewaukee, Wis. purchases tractor shovel—saves on many routine jobs—then finds new uses on chores that went undone prior to its purchase

By **GARRY BOYCE**, Superintendent
Department of Public Works

A saving of $50 a week and increased production have been achieved since the Pewaukee, Wis., public works department began using a one-yard, rubber-tired tractor shovel last spring—but at first glance, the unit seemed beyond the reach of the village pocketbook.

Pewaukee is small. Vital statistics are:

- **Area—2¼ square miles**
- **Street mileage—under 20 (mostly blacktop)**
- **Population—2,500**
- **Main arteries—one, a through route between Milwaukee and Madison**
- **Major street equipment — three trucks, a sewer machine and a farm tractor.**

The primary use for Pewaukee's tractor shovel is in street maintenance and construction. When it is used for this operation, the unit releases a truck for other duties.

Until spring, 1959, the village did necessary jobs with this fleet plus rental equipment. But the system was expensive and the village board of trustees knew it. They also knew that an all-wheel drive tractor shovel would help—but couldn't see spending $15,000 or more for available equipment. Nor could they risk purchase of used equipment.

Then they went shopping — and found a new one-yard tractor shovel just being marketed. It fulfilled budget requirements and could be equipped with back-hoe, snow-plow, sweeper and other attachments, as needed. The village of Pewaukee purchased the first Michigan Model 55-A Tractor Shovel sold in Wisconsin and the village is finding new uses for the unit every day.

Rental of crawler tractors, back-hoe and cranes formerly needed

The unit does landfill duty two or three times a week. It spreads and compacts rubbish, digs cover material and places it.

for almost 50% of the village's maintenance work was eliminated. Rental cost had averaged $50 a week at the going rate of $10 for each machine-hour. Also, jobs that previously had been relegated to the "wish-we-had-time-and-money" category are now being handled by the new rig.

A partial list of the jobs that Pewaukee has found for its "Michigan" is:

1. Stockpile-loading of sand, salt, blacktop and stone. The tractor shovel heap-loads a 5-yard truck in five passes, in 2½ minutes or less, a time saving of 3 to 5 minutes over the former method that employed a farm-type loader.

2. Laying tile for storm sewers. The public works department has welded a hook to the "Michigan" bucket, and uses it with a chain to lift and lower pipe sections. On a recent job, 18-inch by 4-foot tile pipe sections, weighing 650 pounds apiece were unloaded from delivery trucks, piled for storage and lowered into the trench by the unit.

3. Carrying tree trunks. The rig's large lift capacity (7,000 lb.) and balance make short work of heavy tree duty. Formerly, felled trees were cut into short 3- to 5-foot-long sections. Cutting has been reduced 75%, with the tractor shovel carrying and loading 18- to 24-foot lengths. An 18-inch-diameter tree was handled this way.

4. Operating sanitary land fill. Two or three times a week, the unit works at the landfill site, and complaints have been eliminated. For five years, the village rented a crawler tractor every seven to ten days to do this job at a cost of $50 per rental. Although the village picks up rubbish (garbage is handled and treated elsewhere), private citizens can and do dump trash daily into the abandoned gravel pit maintained for that purpose. Frequent covering is necessary. The tractor shovel digs and stockpiles bank-run dirt for cover, dozes refuse over the bank and compacts it. It covers with three to six inches of bank-run as it goes. Only two punctures have occurred, one from a board-imbedded spike and the other from a pair of shears. Both repairs were made inexpensively and quickly.

5. Cleaning the lakefront. The unit wades into the lake to a depth sufficient to clean out weeds during summer months. The job now takes one hour per cleaning. Previously, it took 15 man "hand-hours."

6. Cleaning gutters. The Michigan windrows dirt, leaves, and other debris, then truck-loads it.

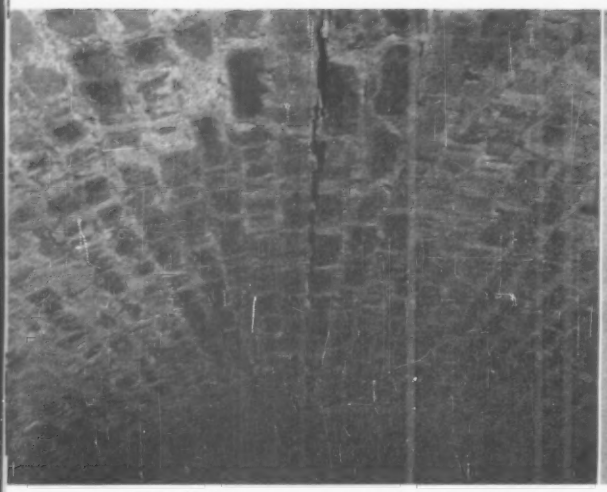
7. Taking place of truck. When trucks are busy elsewhere—and that is often—the unit carries its own load on hauls that vary from a block to more than a mile. In a street patching operation the 26-mile-per-hour Model 55-A can transport a yard of blacktop from stockpile to the repair site, where material is hand-shoveled and packed as needed.

The 55-A has replaced all other methods in maintaining tree trimming schedules. The trimmer works from the bucket eight feet above ground.

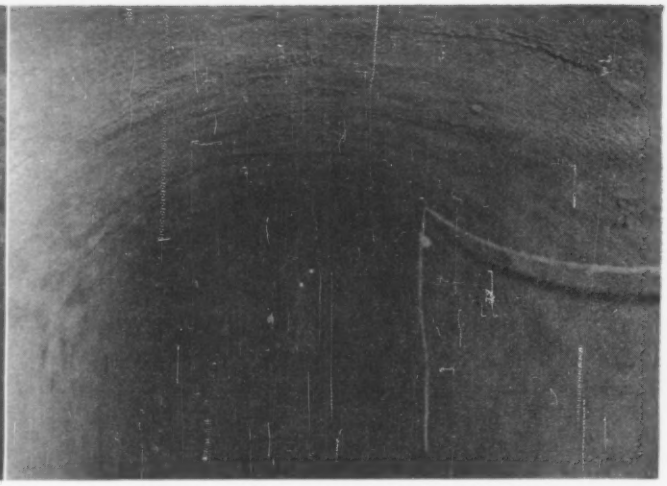
8. Building and repairing streets. The tractor shovel strips and drags topsoil, clay and sandy soils. Positive hydraulic control allows finish grading and back dragging.

9. Tree trimming. Before purchase of the unit, very little tree trimming was done. Various methods were tried, including the use of a truck and life-guard tower. All were abandoned. Now the trimmer stands in the 6½-foot-wide bucket, is lifted up to eight feet above the ground and he safely uses a chain saw or 18-foot pruner as needed. More efficient street lighting and reduction of traffic hazards are only two of the benefits.

Among other tractor shovel tasks are plowing and snow removal, cutting high banks, loading broken sidewalks and other rubble, and digging out sludge drying beds at the sewage disposal plant.



Imminent failure in the old three-ring Lloyd Street trunk sewer was forecast by deep cracks that appeared in the roof and in the alteration in the cross-section of the trunk from a nearly circular shape to an alarming ellipse.



The cross section of the completely salvaged sewer maintained the deformation but six inches of pressure-placed concrete on two concentric reinforcing cages removed the danger of cave-in in the 600-foot line.

Atlanta Saves 8-Foot Sewer--and $

Pressure-placed concrete on two-layer welded-wire cage restores dangerous old sewer at a fraction of the cost of other methods

By **RAY A. NIXON,** Chief Dept. of Construction

Steel-reinforced fabric and cement-gun concrete have salvaged 600 feet of an old eight-foot-diameter trunk sewer in Atlanta, Ga., and the cost to the city was only $30,000.

The salvage job was forced by the construction of the South Expressway, designed to carry U. S. Highway Route 41 south of Atlanta and eventually on south to Macon. Where the new high-speed artery now terminates southwest of downtown Atlanta, it crosses the Lloyd Street trunk sewer, which lies far below the finished grade elevation of the new right-of-way.

The three-ring brick trunk line was built in 1893 and designed originally to bear a normal fill load of about 15 feet. But new fill for elevating the bypass route, to carry traffic over Georgia Avenue, resulted in as much as 40 feet of new fill under the expressway.

First signs of trouble appeared, not under the right-of-way, but west of there, where, apparently due to uneven pressures of the fill load, the roof of the old sewer collapsed in February, 1959. A cave-in next to a street west of the filled area blocked off most of the flow in the combination storm and sanitary line.

Immediate action by the Department of Construction consisted of two steps. First, they bypassed the normal flow through existing smaller lines to a downstream point where the relief sewer rejoins the Lloyd Street trunk. A dam across the up-grade end of the break effected the bypass.

Next, after the cave-in (which was about 60 feet long) was cleared of earth and brick rubble, two sections of Armco 72-inch corrugated metal pipe were installed temporarily for emergency storm-water runoff.

With emergency measures completed, M. B. Nixon, assistant chief of construction, and R. W. Respess, engineer of sewers, inspected the old brick trunk for additional damage due to excessive loading of the expressway fill. They found that the roof had been seriously weakened in several other places under the right-of-way, with long deep cracks showing between courses of brick.

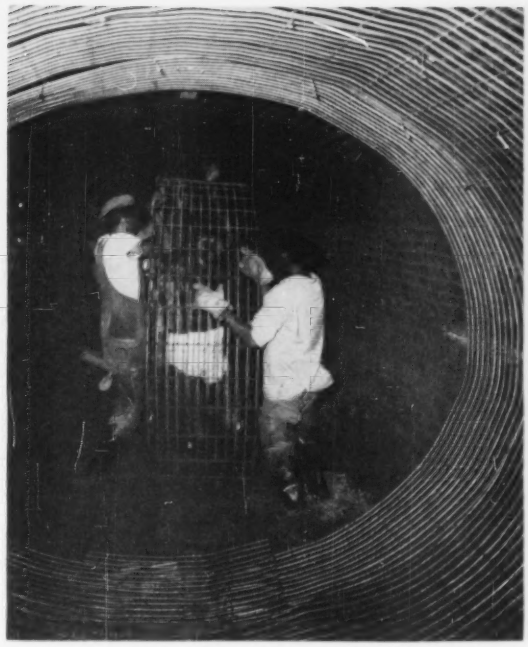
Under more than one section of the fill, the shape of the tunnel had been altered from nearly circular to elliptical. As an immediate safety measure, timber shoring was placed in these areas to prevent further collapse.

In all, 600 feet of the trunk were weakened, in some places dangerously, and it was decided that this much of the old sewer should be rebuilt, repaired or somehow restored to safe service.

Methods Investigated

At first, Nixon and Respess considered placing steel pipe inside the strained, eight-foot-diameter trunk. But the use of pipe small enough to slip inside the narrowest necks of the somewhat squashed line would have resulted in too great a loss of capacity. (After sudden rain storms, or under flood conditions, the Lloyd Street trunk must continue to handle extremely heavy burdens.)

Irregularities and necked-down portions convinced the engineers



Reinforcement "hoops" are rolled along the sewer invert, then turned 90° . . .

. . . then expanded into countour-hugging cages and fastened to furring strips.

that relining the trunk with reinforced concrete was the solution. They decided to build in place a reinforced concrete pipe that would conform with existing contours with minimum loss of capacity.

Two concentric cages of welded-wire fabric were specified. These were to be embedded in six inches of pressure-placed concrete, bringing the effective inside diameter of the re-lined trunk down to about seven feet.

The reinforcement was designated as 2x7—3/0/5 and 2x7—4/0/5, indicating that the 3- and 4-ought wires (approximately 3/8 inches in diameter) be placed circumferentially at two-inch intervals inside the sewer, "spaced out" by lighter, 5-gauge wires on 7-inch centers, running parallel to the trunk.

The slightly heavier circumferential wires (4-ought) were to be used for the inner cage of the relining to bear the greater stresses of earth loads above. (The weights of reinforcing specified are almost identical with weights used in 84-inch conventional pre-cast reinforced concrete pipe.)

Installation Procedures

The reinforcement arrived at the job site in 25-foot-long, 4-foot-wide rolls, and circumferential lengths were cut for forming the cages. However, diameters of most of the manholes through which all material had to be lowered into the trunk were too small, so 4-foot-widths were cut in half, and the two-foot-wide sections were lowered with little trouble. This was the only change in construction procedures that were worked out during the planning stages.

The crane operator and workers at the top of the manhole guided each piece down, and workers, 40 feet below, grasped the trailing guide line and pulled it into the trunk. They then coiled the lengths into compact hoops inside the sewer. These coils were rolled along the invert, turned 90° and allowed to expand to fit the cross-sectional

Three inches of pressure-placed concrete finished the first application. This first layer was followed by another (inner) cage and the application of another 3-inch layer of "gunned" material. The final thickness was six inches.

Surface-based crews lower 24-inch-wide, circumference-length reinforcing strips down to tunnel workers, more than 40 feet below, through manholes. The work was done by members of the city's Department of Construction force.

outline of the trunk. The crew secured the cages to furring strips that were fastened to the top, bottom and two sides of the old 3-ring brick sewer. They fitted each length and wire-tied it to adjoining lengths. Then they lapped and tied the ends to assure continuity of circumferential reinforcing.

To assure most effective use of the fabric reinforcing in resisting loads, the outer cages were lapped at the bottom, but the inner cages were lapped at the upper quarters of the sewer alternating at "ten and two o'clock."

When city forces had placed about 200 feet of outer cage, Nixon and Respess called in the Western Waterproofing Co. of Altanta to start cement-gun work. The Ingersoll-Rand 600-cfm rotary diesel compressor and 2-bag Muller mixer were truck mounted and the mix was fed through hoses to the "gunners" below. About eight cubic feet of concrete per hour were placed with about a hundred lineal feet of two-layer concrete applied each week with Cement Gun Co. N-2 guns. The gun-placement operation was the only portion of the pipe-salvaging project that was handled by outside contractors.

After each three-inch layer of concrete was applied, two days were allowed for "setting up." This was followed by placement of the inner cage of steel fabric and the second three-inch layer of concrete.

The final step in the restoration of the old sewer will be the replacement of the temporary corrugated pipe sections by 65 feet of conventional, plant-manufactured reinforced concrete pipe at the scene of the cave-in.

The actual salvaging operation was accomplished during the 1959 summer months. Two weeks were required for placement of wire cages and though excessive rain delayed operations in late August, actual working time for shooting concrete was slightly over six weeks.

By the time the project was substantially completed, the Department of Construction found that cost estimates had been accurate. The work had cost about $30,000—a truly inexpensive solution to a tricky sewer salvaging problem.

Fremont Coordinates Recreation and Saves

Coordinated use of all public leisure and aesthetic programs not only is more effective and beneficial for the citizenry but should save money as well. It is just such a plan that the California city of Fremont is establishing. First step was the establishment of a department of Community Recreation with three divisions: Libraries, Parks, and Recreation.

By coordinating intra-divisional responsibilities the city will be able to use its department staff, facilities and resources with maximum efficiency. Thus it will eliminate the duplications that quite often occur when separate departments are set up and the taxpayers of Fremont will benefit from the money saved.

The Park Division will develop and maintain street trees, parks and parkways, public buildings, a municipal airport, a yacht harbor and waterfront area and library buildings.

The Recreation Division will develop programs to make use of park areas by nature, historic, garden and other outdoor groups.

The Library Division will develop a more adequate library program for community intellectual and cultural growth with music, art and drama appreciation and discussion groups, nature study and like programs, planned in cooperation with the Recreation and Park Divisions of the department.

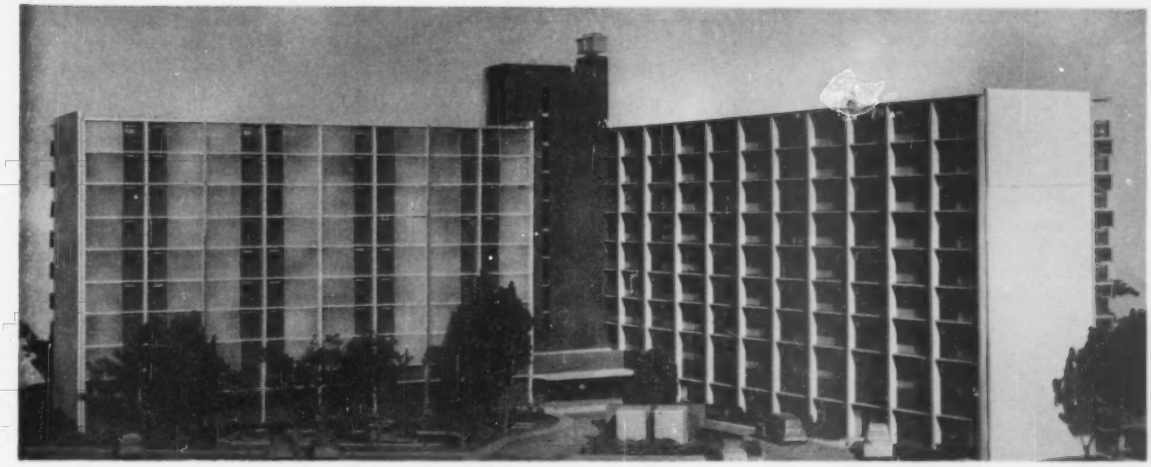
All will help develop a broad leisure program satisfying all recreation needs, from a children's theatre and after-school recreation programs to evening round-tables and senior citizens' groups.

Many outstanding projects will be made possible by the Department's concept of cooperation with other agencies. The Department will work with school officials for joint development of school-park areas; with the Alameda Flood Control District for the development of the Alameda Creek as a walking, hiking, camping and picnic area, and with the Historical Society for the development of our historical sites and museums.

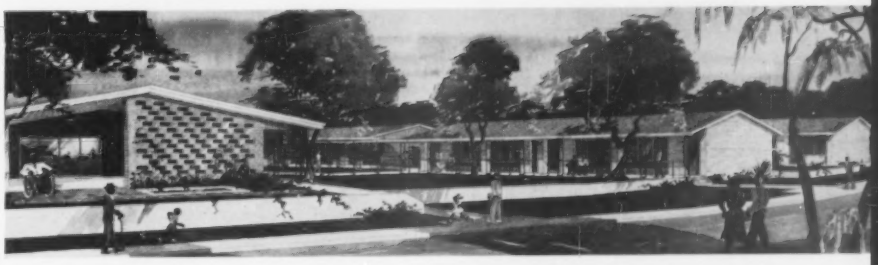
This "ideal" amalgamation is not something that appeared suddenly in Fremont. It almost was born with the city in January 1956 and was introduced by the first city manager, F. Robert Coop. He and the first director of community recreation, Don Driggs (now Assistant City Manager), did the initial spade work for the integration of community leisure responsibilities, and our present city manager, Howard Reese, is advancing the development of this concept. The City Council and the community's leaders have endorsed their recommendations.

These recommendations now are being fulfilled through establishment of the new concept in leisure administration in the City of Fremont.

L. H. McVicar
Director
Dept. of Community Recreation
Fremont, Calif.



This attractive building has been designed to help provide useful, productive years to those enjoying an increased life span.



This motel-like design is another such group for San Antonio's oldsters.

People Live Longer Today

. . . so San Antonio adjusts its public housing program to the increased life expectancy

By **MARIE C. McGUIRE,** Executive Director
San Antonio Housing Authority

Our city, already experienced in blending the Latin and North American cultures, is taking definite steps to accommodate comfortably that growing segment of our population who now enjoy increased life expectancy. In 1900 there were only 3,000,000 in our country over the age of 65—today there are 16,000,000; in 1970 there will be 20,000,000 and in 2000 the average life span will be 82 years with a potential of 125 years.

The San Antonio Housing Authority three years ago recognized this trend. Our plans encompass more than just a place to live for these mature citizens blessed with an increasing life span. We aim at something that will permit them to be useful in a youth-centered society. This thinking has influenced the design of two new housing developments in San Antonio.

One is an apartment building of 185 units with zero, one, and two bedrooms. The first floor is a 5,600-square-foot center with auditorium, craft room, counseling offices, library, clinic, and demonstration areas. The Hogg Foundation for Mental Health of the University of Texas, sensing the research potentials, will provide a center coordinator and more than a dozen local agencies will staff and operate it. The center will serve the social, educational and leisure-hour needs of the older people of the city, not only the building occupants. For this reason and because surveys indicated the elderly prefer the convenience, the sense of security and opportunity of being in an active area, the building is located close to the center of the city.

The building will house only older folk, but it is located immediately adjacent to an 800-unit, two-story family housing project. Again surveys among older people showed that they preferred the privacy and quiet, the opportunity of being on their schedule and pattern of life, but also the opportunity of having younger companions when *they* wanted them.

The apartments are replete with safety factors, many of which probably will be adopted in all types of

housing. Shelves and light fixtures are low, to rule out climbing and reaching; refrigerators are on a 14-inch platform to eliminate stooping; doors will have levers instead of knobs and will be wide for wheel chairs; there will be no gas appliances; showers will have Alaskan cedar wooden seats and will be designed to permit regulation of water flow and temperatures before entering; they will have tempered glass shower doors rather than dangerous curtains and grab bars at different heights and angles throughout the bathroom; there will be an emergency bell between commode and lavatory that rings on the outer gallery and a protected record on the inner door of whom to call in case of emergency.

Of particular design interest is the space flexibility. The apartments can be turned into one big room or separated through use of portable closets into private areas. This permits different arrangements during illness and also permits a wider range of family size. Dining space is by a window so that the lone person's appetite may remain normal by associating himself with outside activity.

There is a small laundry on each floor rather than the less convenient and often drab basement treatment. The laundry area is roomy with opportunity for comfortable visiting and thus the backyard social aspect of this phase of living is recreated. Ironing as well as washing may be done.

Only the first floor of the Center is air-conditioned but the thin build- (33 feet wide) permits each apartment to have complete cross ventilation. The building itself is oriented to the prevailing southwest breeze on the 2½-acre site.

Outdoor living in San Antonio's warm climate is emphasized. An eight-foot wall makes the shady garden patio completely private from an adjacent busy street. It is reached by a large veranda closed on three sides and opening off the lobby. Even the lobby came in for psychological analysis. It is not just an entry but is the play area, complete with a billiard table, card tables, TV and just sitting and visiting space. Quietness was emphasized only for the library, clinic and counseling offices.

Art Interest

The pride of the City of San Antonio in this broad undertaking is no better demonstrated than by the keen interest of the art group of the city in embellishing the structure. Sculptors, potters, painters, glass workers—some 30 distinguished art workers—are donating their time, labor and materials to translate in art the great social concept of the undertaking. Enthusiasm has even reached across the border and a distinguished Mexican sculptor will send a piece.

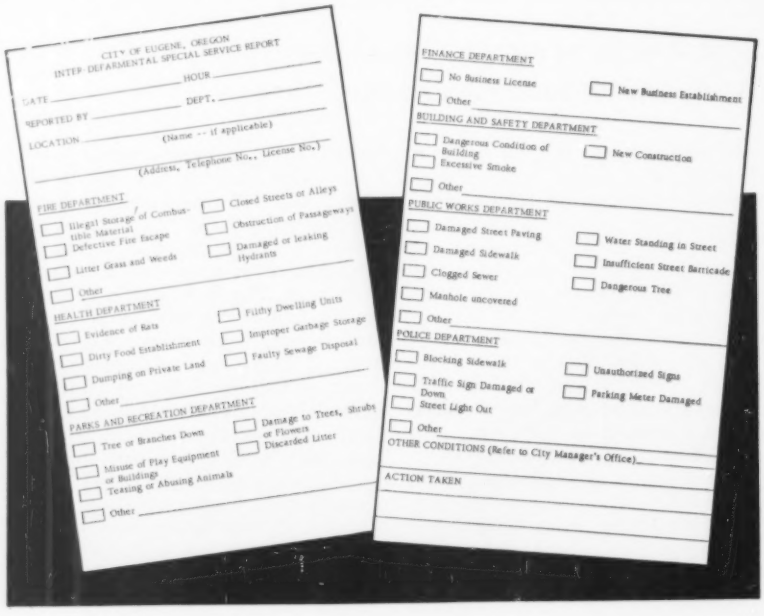
A second housing development for older citizens is already complete and occupied It consists of 36 one-story, cottage-motel units situated on a square block within another family housing project. The unit designs are identical with those in the apartment building. A community center for the elderly also is a part of this development. The authority believes that there must be choices in ways of living if the diverse needs of the elderly are to be met. It also believes that health groups must speed their programs to be able to give proper medical care to this growing population group.

"Independent living at a cost that they can afford is what most elderly people want," the authority says, "and in addition, it is far less costly than public institutions for the well elderly."

Says San Antonio's Mayor Pro Tem Mike Passur, "Our entire city is proud of the pioneer work of our housing authority in the field of housing for the elderly. Private builders, church, and fraternal groups in and out of the city have watched with interest and I'm sure have learned a great deal from our effort. This undertaking is a new industry in human welfare and we hope that what San Antonio is doing will be emulated in cities across the country to relieve the impact created by the dramatic increase in the life span."

Reporting Local Malfunctions

Eugene, Ore., has developed an interdepartmental report form to be used by all employees to report malfunction of local governmental services. The forms are kept permanently in all city-owned vehicles. The form provides a simple, checklist means of reporting defects. The vehicle operator hands it to his immediate supervisor, who in turn forwards it to the department involved. The front and back of the form are shown in this picture.

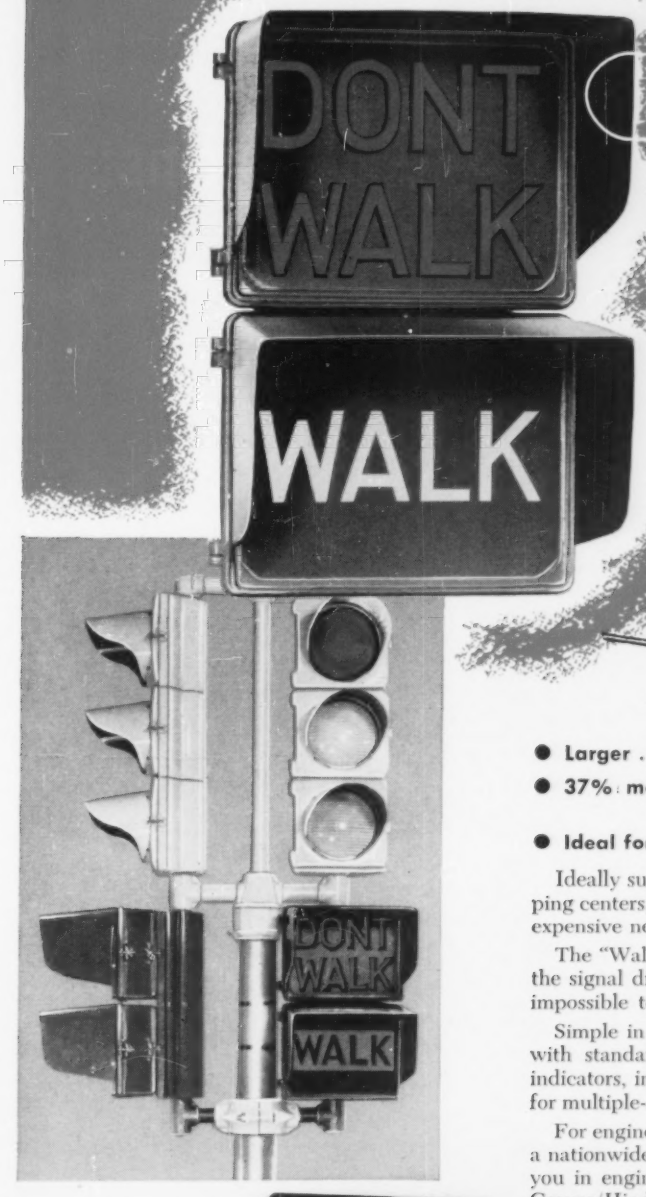


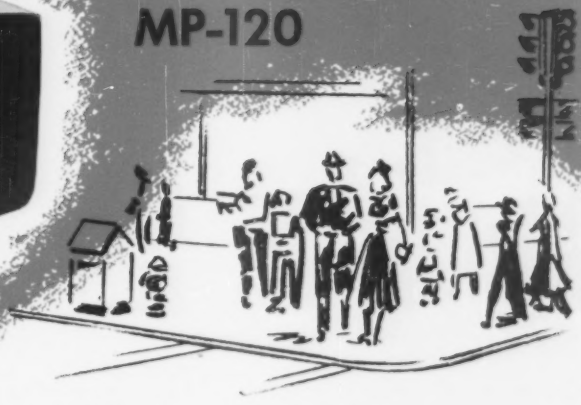
New CROUSE/HINDS

INCANDESCENT

Pedestrian Traffic Signal

MP-120





- Larger . . . brighter . . . more readable
- 37% more effective lens area . . . 9″ x 11″ prismatic lens
- Ideal for crossings 50′ - 60′ wide

Ideally suited to residential areas, school crossings, small shopping centers, etc., the MP-120 offers significant savings over more expensive neon units designed for crossings up to 125′ in width.

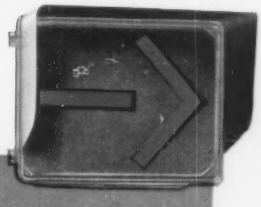
The "Walk/Don't Walk" legends and the rectangular shape of the signal distinguish it instantly as a signal for pedestrians . . . impossible to confuse with circular signals for vehicular traffic.

Simple in design, modern in appearance, the MP-120 mounts with standard signal brackets, without special fittings. Arrow indicators, in place of "Walk/Don't Walk" legends, are available for multiple-street vehicular indications.

For engineering and service assistance, Crouse/Hinds maintains a nationwide network of sales engineers and distributors to assist you in engineering and service situations. For the name of the Crouse/Hinds representative nearest you, call or write any branch office.

ABOVE — MP-120 Installed on Standard Signal

RIGHT—Arrow for Vehicular Use MP-110



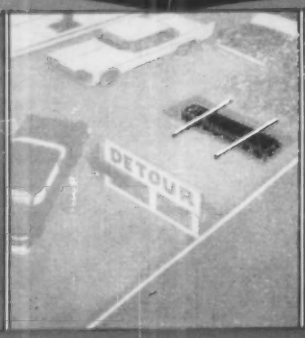
WRITE for Bulletin #2716 containing complete information and specifications on the MP-120 Pedestrian Traffic Signal today.

CROUSE HINDS
SYRACUSE NEW YORK

Offices: Atlanta, Baton Rouge, Birmingham, Boston, Buffalo, Charlotte, Chicago, Cincinnati, Cleveland, Corpus Christi, Dallas, Denver, Detroit, Houston, Indianapolis, Kansas City, Los Angeles, Milwaukee, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, Portland, Oregon, St. Louis, St. Paul, Salt Lake City, San Francisco, Seattle, Tulsa, Washington. **Resident Representatives:** Albany, Baltimore, Reading, Pa., Richmond, Va.

Crouse-Hinds Company of Canada, Ltd., Toronto, Ont.
Crouse-Hinds Instrument Company, Inc., Silver Spring, Md.

here are 8 reasons why the ELECTRO-MATIC® RADAR VEHICLE DETECTOR solves more traffic signal problems:

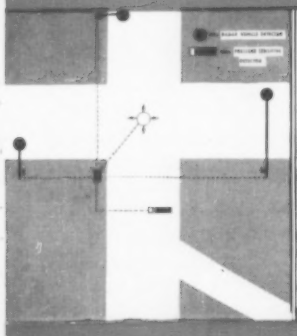


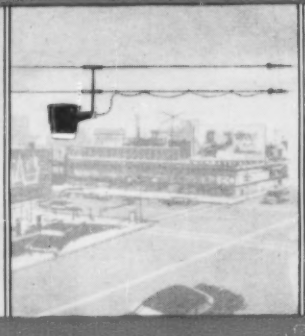
1. Now the new Model RD-2 Radar Vehicle Detector meets requirements of all types of traffic-actuated signal controllers.

2. Convenient overhead installation eliminates costly, time-consuming excavations and detours encountered with other detectors.

3. Beam width can be adjusted by remote control to cover from one 9-foot lane, up to three traffic lanes as desired.

4. Operation is not subject to traffic wear and is unaffected by parked cars, weather, or extraneous radio interference.





5. New "one car equals two impulses" feature permits RD-2 to be used in combination with existing pressure detectors on same traffic phase.

6. Radar Detectors may be mast arm mounted on existing wood or steel poles using standard luminaire-type mast arms.

7. Mounted on rigid 2-wire span, one or more Radar Detectors can be suspended in positions difficult for other detectors and mountings.

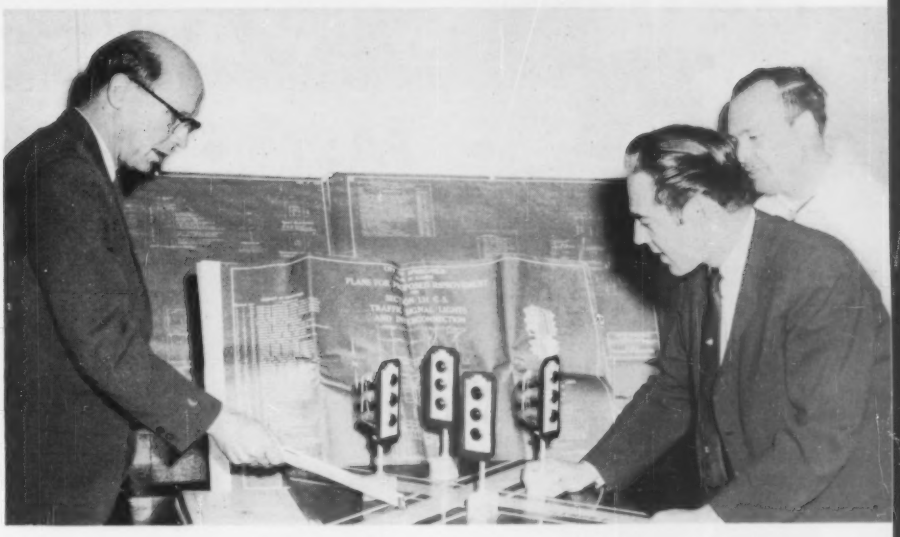
8. Keeps costs down because of ease of maintenance and removal in the event of roadway changes.

Give your intersections the newest in vehicle detection, and in doing so, save both time and money. Write for Bulletin D-165.

TRAFFIC ACTUATED

AUTOMATIC SIGNAL DIVISION

EASTERN INDUSTRIES, INC. • NORWALK, CONNECTICUT



Charles A. Nelson, city engineer; John E. Hartley, city traffic engineer; and Carl A. Wieland, of the consulting firm of Crawford, Murphy and Tilly (left to right), discuss a proposed signal installation for a Springfield street intersection.

Successful Traffic Signaling In Springfield, Ill.

Cooperation of governmental agencies in traffic signal program did it

By JOHN E. HARTLEY*

Springfield, Ill., with a population of 85,000, has experienced more than a 100% increase in registered vehicles since 1947. Because many smaller communities, such as Springfield, do not have the financial means to carry out even the minor physical street improvement programs that are considered commonplace in larger cities, the traffic problem in the smaller city could be viewed as even more acute than that in metropolitan areas. Thus, the traffic engineer, regardless of the size of the city in which he practices, must always be aware of the need for extracting maximum efficiency from what is in most cases a rather inflexible network of streets.

One of the most valuable tools available to him is the traffic signal. Recent advances have resulted in traffic signals almost uncanny in their sensitivity to changing traffic demands. Detectors continuously sample traffic volumes and adjust the signal system to optimum timing and progression. Another signal system, developed earlier, is the flexible, multi-dial interconnected system which includes provision for establishing, by means of a program device, various signal timing and progression arrangements based on the cyclical nature of traffic volume characteristics.

Until 1954, Springfield had an antiquated downtown signal system as inflexible as the street network it controlled. In that year, on the recommendation of a prominent traffic consulting firm, Springfield undertook to modernize the downtown signal system. A multi-dial, interconnected system embodying 37 intersections was installed at a cost of $225,000. In 1956, the Traffic Engineering Department incorporated into the system a rush-hour cycle which more than doubled the average speed of traffic through the Central Business District at the 5:00 P.M. peak.

Outlying Intersections

Meanwhile, the need for additional traffic signals at outlying intersections was becoming more apparent as congestion and accidents increased throughout the city. At the beginning of 1956 only 24 intersections outside the downtown area were signalized Traffic studies, carried out by the city in cooperation with the Illinois Division of Highways, indicated that signals were justified at 57 additional intersections.

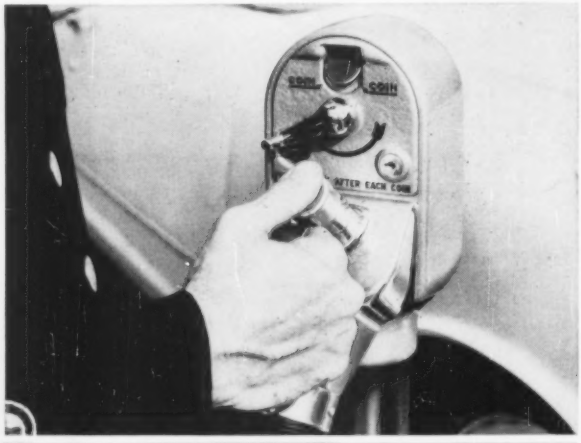
The City Engineer's office retained a consulting engineering firm which prepared construction drawings to standards set by the Traffic Engineering Department. Within 18 months, 28 intersections were signalized; motor fuel tax funds financed all these installations.

Our policy of securing the greatest possible flexibility has resulted in the installation of both actuated and fixed-time equipment. Fixed-time signals were interconnected whenever it was felt that this addi-

* As city traffic engineer of Springfield, Mr. Hartley was intimately connected with the development of the program described in this article. Since June 1959 he has been the city traffic engineer of Kansas City, Mo.

NEW 2-SECOND COLLECTION SYSTEM by "MARK-TIME"

• FAST • SAFE • EASY



Step #1 Locked metal vault on cart is easily rolled from post to post by officer.

Step #2 Handy "Speed Collector" with super flexible extra wide diameter hose plugs into meter. Then push plunger.

Step #3 Turn handle—money falls safely into vault. Passage of coins is unexposed and 100% secure from meter to sealed collection vault. As "Speed Collector" is removed, coin receptacle is automatically resealed.

This is the fastest, safest, easiest method of collecting from parking meters ever designed. The system is adaptable for use with present "Mark-Time" meters. Complete details and demonstration available on request.

Write for Stereo demonstration with viewer and set of stereo color photos of 2-second collection system in action. See for yourself!

Write for new free book, "Better Parking Means Better Business."

INSIDE VIEW OF "SPEED COLLECTOR"

M. H. RHODES, Inc.
HARTFORD, CONNECTICUT

tional flexibility would result in a higher quality of transmission through intersections. Springfield has installed actuated equipment manufactured by the Automatic Signal Div. of Eastern Industries, Inc., East Norwalk, Conn., and the Eagle Signal Corp., Moline, Ill. Fixed-time equipment has been furnished by the Econolite Corp. and the Eagle Signal Corp.

The second phase of the program currently underway includes a contract for signalizing 19 intersections and modernizing 3 others. The final phase will consist of signalizing ten additional intersections and any others at which a warrant may materialize.

Springfield is currently investigating the feasibility of utilizing radio-controlled interconnection rather than underground or overhead interconnecting cable. There is a strong possibility that a central transmitter will be installed to master not only existing interconnected systems, but all future fixed-time intersectional installations as well.

Since 1956, Springfield has expended the sum of $254,000 to expand and improve its traffic signal system. It is estimated that an additional $60,000 will be required to complete the original priority program. The dividends of this expenditure have been clearly demonstrated by significantly reduced congestion at heavily travelled intersections. Furthermore, accidents have remained at approximately a constant level despite the increase in vehicular registration.

The intersections signalized, however, were only those that warranted this control on the basis of the Manual of Uniform Traffic Control Devices, and not on political whim.

Officials charged with the administration of traffic matters in Springfield are justly proud of the results of the city's signal installation. They were brought about in an atmosphere of mutual cooperation between various governmental agencies.

Downtown Parking

A Bureau of Public Roads study has disclosed that motorists park downtown in various size cities for these reasons:

City Size	Work	Business	Shop	Other
3,000- 10,000	15%	32%	27%	26%
10,000- 25,000	16	30	33	21
25,000- 50,000	17	32	29	22
50,000- 100,000	17	30	30	23
100,000- 250,000	16	38	25	21
250,000- 500,000	23	42	17	18
500,000-1,000,000	22	44	18	16
1,000,000 and up	41	31	13	15

Alhambra's Street Name Signs

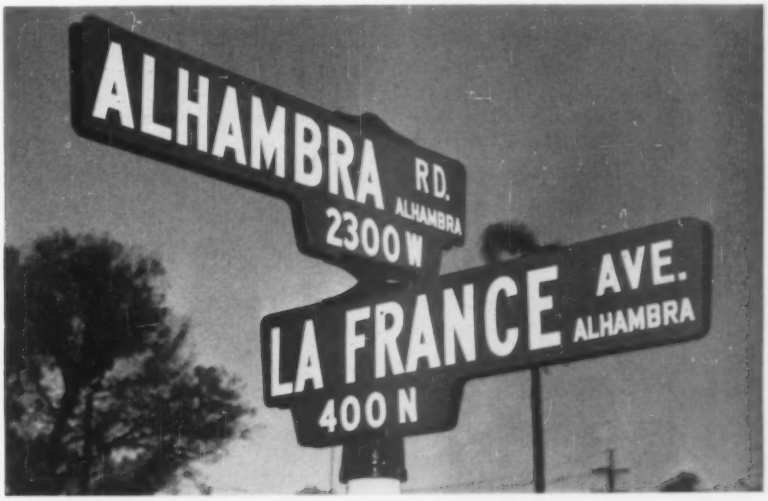
The first order of Alhambra's new street name signs has been delivered to this California city. The signs have been placed throughout the city, according to R. J. Colpitts, Traffic Engineer.

The new street signs have a white legend on a "parkway green" field, in place of black on a white field for the older style of signs. The new signs also carry the city's name, "Alhambra," on the right hand side of the sign below the street designation.

The new signs are of a strong box-type steel construction, 30 inches long and ranging from 6 to 9 inches in width. They are porcelainized; galvanized sign hardware is used for installation. They can be installed in three different manners: double sign criss-cross on top of post, single sign on top of post, or side-of-post mounted. The street name signs used previously could only be installed by mounting on the side of a post. The new signs will be supported more than one-half the length of the sign for added strength and stability.

The new design and the different means of mounting the signs should reduce the vandalism of these signs substantially. The new sign is a step in providing motorists in a metropolitan area with quick identification of their locations. The manufacturer is U. S. Porcelain Enamel Co., 4731 E. 52nd Drive, Los Angeles 22, Calif.

ALLEN B. STEPHENSON, *City Manager*



Alhambra's street name signs clearly mark the spot.

Built for police work, Solid Plymouth '60 Emergency Wagons have Dura-Quiet Unibody construction and almost 100 cu. ft. of cargo area. Engines you can get on these wagons range from 145 HP to 330 HP.

They're built a new way with sturdier, longer-lasting bodies.

Every Police Wagon is built the solid Dura-Quiet Unibody way. Approximately 5900 precise welds join heavier steel of body and frame into one sturdy, solid, welded unit.

They've got plenty of room to handle almost any police emergency.

Load capacity is almost 100 cu. ft. Loading deck is over 10 ft. long. The 8-cylinder nine-passenger models ride nine officers in comfort.

They're available with a wide choice of engines—some at extra cost.

There are eight Plymouth engine options. They range all the way from the outstanding new 145 HP 30-D Economy Six engine to Plymouth's new 310 or 330 HP SonoRamic Commando V-8 engine—the first mass-produced engine with ram-induction manifolding. Other engine choices available are the Fury V-800, the Fury V-800 with Super-Pak and three powerful Golden Commando V-8 engines.

They're heavy-duty equipped for demanding police work.

Both police models, the 8-cylinder nine-passenger wagons and the 6- or 8-cylinder six-passenger wagons, are heavy-duty equipped. Front and rear suspensions are heavy-duty. Brakes are a big oversize 12 in., seats are firm, seat springs hefty. Vinyl trim is heavy-duty.

Remember there are three Solid Plymouth '60 Police Cars, too.

There are the Patroller 6, the Patroller Special 8 and the Pursuit Special 8. Each one is built special for the job it has to do whether that job be in the city or the country, or both.

Interested? See your nearest Plymouth dealer. Ask him for free copies of both the new fact-filled Plymouth Suburban Booklet and the new Plymouth Police Car Catalog. Do it today.

SOLID PLYMOUTH 1960

A Chrysler-engineered product, built a new solid way to give you solid satisfaction.

New York City's Walk-Don't Walk Signals Are Learning to Talk

Talking pedestrian signal at Fifth Avenue and 42nd Street.

This first application in the United States of a synchronized audio-visual technique to "Walk-Don't Walk" signals is aimed at increasing pedestrian compliance with the existing visual signal.

The "talking" signal, demonstrated at Fifth Ave. and 42nd Street on December 3, runs on as follows with this lengthy and possibly distracting message:

"BE CAREFUL: The flashing DON'T WALK signal indicates it is now too late to leave the curb. If you are in the roadway, cross quickly to the other side of the street . . .

"DON'T WALK . . . Remember, jaywalking is now against the *law*. You not only risk getting killed, but getting a summons as well. Of the 17,500 jaywalker casualties last year, over 2,600 were killed or injured while crossing against the red light. So, obey the law and DON'T JAYWALK!! . . . You always protect yourself and others when you remember to . . . CROSS AT THE GREEN . . . NOT IN BETWEEN! . . ."

The above paragraph is repeated.

"WALK . . . The green pedestrian signal on 5th Avenue now indicates WALK . . . You can cross the Avenue with safety and ease. Crossing at the corner with the light in your favor will safeguard your life . . . BE CAREFUL! the WALK signal will soon flash red."

Developed by engineers of the Traffic Department and the Arnold Products Company of Brooklyn, the new device will be under study by Traffic Department engineers during a test period to determine its safety value for possible wider application in the department's continuing safety activities.

Installation of 550 new "WALK-DON'T WALK" signals was the highlight of New York City's 1959 pedestrian safety campaign, according to Traffic Commissioner T. T. Wiley. The corner of 42nd Street and Broadway, "crossroads of the world," was the first of 100 intersections throughout the five boroughs to receive the new signals.

The new "WALK-DON'T WALK" installation program will increase the existing city-wide total by 50%, bringing the number of pedestrian signals to 1,630.

"Look When You Walk" was the theme for the city's month-long campaign for pedestrian safety in mid-summer.

Commissioner Wiley urged pedestrians and motorists to follow the rules of safe conduct as spelled out by the traffic regulations in order to avoid accidents or risk paying fines. For pedestrians they are:

1. Don't cross against a "DON'T WALK" signal.

2. Don't enter the roadway when the flashing "DON'T WALK" is on.

3. Don't cross against a red traffic light unless you yield to all vehicles.

4. Don't cross mid-block unless you yield to all vehicles.

5. Don't cross diagonally at an intersection.

6. Don't disobey directions of police officers.

"Motorists also have responsibilities to the pedestrians," continued the Commissioner. They are:

1. Motorists, turning left or right on the green signal, must yield to pedestrians also crossing on the green signal at an adjacent crosswalk.

2. Motorists must yield the right of way to pedestrians crossing a roadway on a "WALK" signal.

3. Motorists must yield to pedestrians already in the roadway when flashing "DON'T WALK" signal goes on.

4. At intersections without traffic or pedestrian signals, motorists must yield to pedestrians crossing within a crosswalk.

5. Motorists shall exercise due care to avoid colliding with any pedestrian.

Typical installation showing Design 800H Hy-Lite standard with pole top ballast.

The New 800 SERIES

Stress-Spun

LIGHTING STANDARDS

the beauty of concrete at an economical price

Here's news about a low cost concrete lighting standard with high-priced advantages.

Design 800 Stress-Spun Hy-Lite standards combine the qualities of prestressing with modern design to offer maximum strength and durability.

A continuous taper through the ground line eliminates grade level problems. Neither soil settling nor re-grading affects the appearance or permanence of the installation. Hy-Lite standards with precast butt base are set in place quickly and easily at minimum expense. No extra contracts for footings.

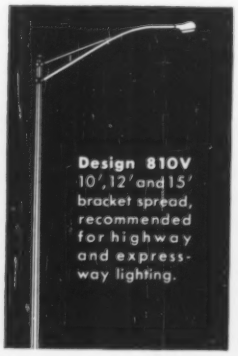
The trim, modern appearance of the highly polished granite and marble finish keeps a quality look indefinitely.

Interested in further information, drawings or specifications? Address the American Concrete Corporation, 5092 North Kimberly Avenue, Chicago 30, Illinois.

American Concrete

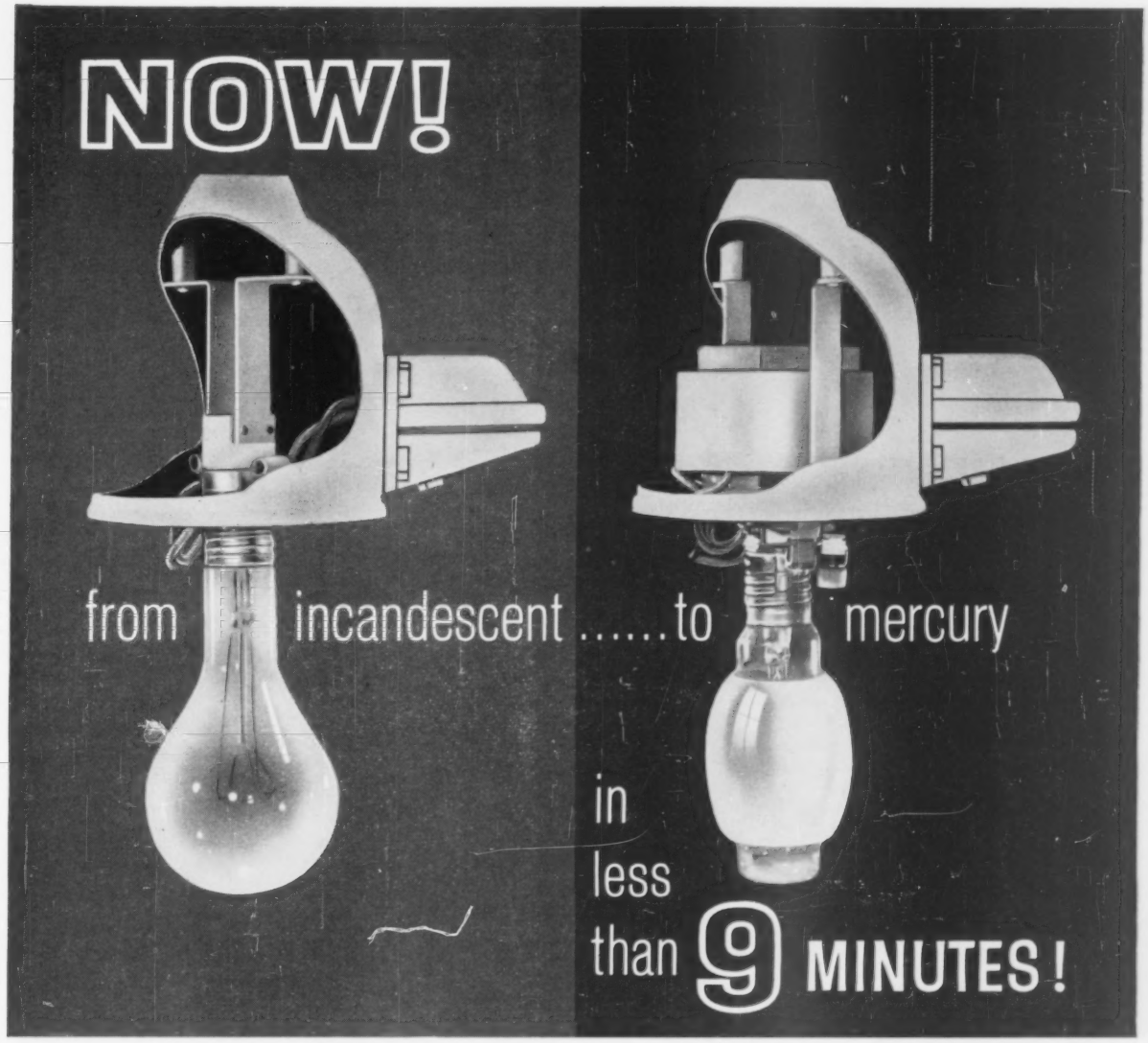
Stress-Spun Prestressed Concrete Lighting Standards

Design 800H 6', 8' and 10' bracket spread, recommended for residential and business area lighting.



Design 810V 10', 12' and 15' bracket spread, recommended for highway and expressway lighting.

Design 810Y for slip-fit fluorescent luminaires.



...with new Sylvania Mercury Conversion Kit

Sylvania now brings you simplified, timesaving conversion kits for mercury lamps that let you triple your light output, save operating dollars—*without the penalty of high installation costs.*

These kits permit conversion of your existing heads to mercury in one easy operation. They're designed for EEI-NEMA type heads, and because the ballast is built right into the kit, time-consuming installation of remote-mounted ballasts is eliminated. Sylvania also offers the reactor separately for adaptation for other in-head ballast assemblies, and special mounting brackets where equipment requires.

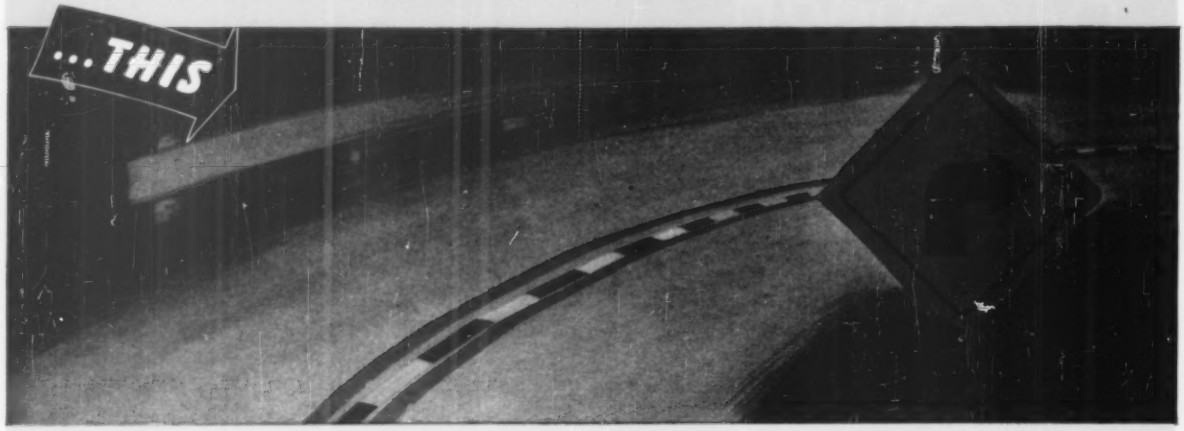
For technical details write for our new descriptive brochure on Sylvania Mercury Conversion Kits, Sylvania Lighting Products, a Division of Sylvania Electric Products Inc., Ipswich, Massachusetts. In Canada: Sylvania Electric (Canada) Ltd., P. O. Box 1190, Station "O," Montreal 9.

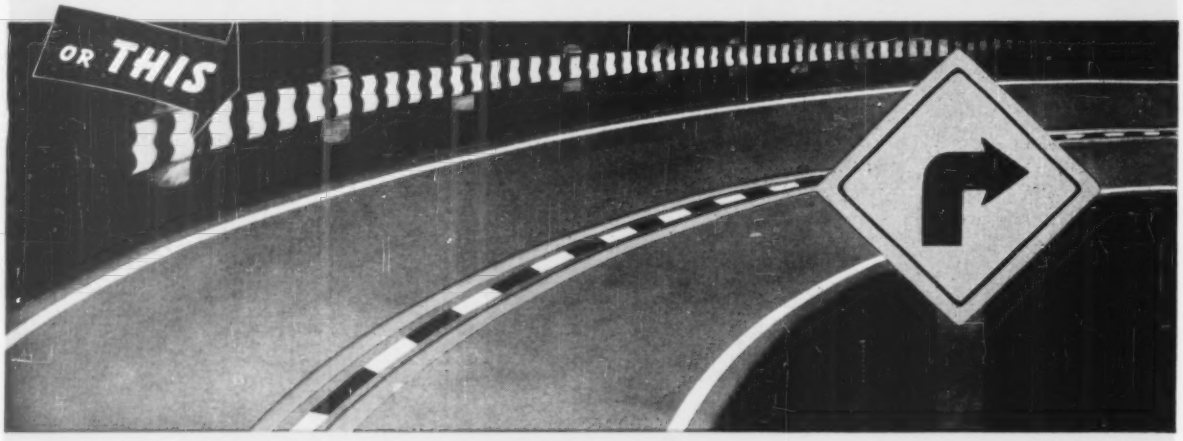
SYLVANIA

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS

DO YOUR TRAFFIC SIGNS LOOK LIKE...





FLEX-O-LITE LEAD-FREE REFLECTIVE GLASS BEADS COULD MEAN THE DIFFERENCE

Signs employing the finest reflective materials are adversely affected in a number of ways, such as by moisture, thermal changes and dirt . . . as well as acts of vandalism, accidental breakage and normal wear and tear. Further, the sulphides in industrial fumes attack glass beads containing lead, causing them to turn dark, with a consequent loss of their reflectiveness and visibility. Maintaining adequate visibility through fair weather and foul for maximum safety is a *must*. To ignore this fact is bargaining with lives. So, it is just common sense to buy lead-free beads that won't turn dark. That's why street and highway engineers specify Flex-O-Lite Lead-Free Reflective Glass Beads —with full confidence in their maximum brilliance and lasting reflectivity throughout a longer life. Specify the beads proved best by test. Insist on Flex-O-Lite Lead-Free Reflective Glass Beads. Write for free, informative brochure.

- **#831 REFLECTIVE GLASS BEADS**—Best for white and yellow signs. Meet and exceed all test requirements . . . microscopic, acid, sodium sulphide, spherical content, gradation.
- **FREE-FLOWING REFLECTIVE GLASS BEADS**—Won't agglomerate. Contain no injurious waxes, oils or resins. Offer perfect adhesion to any suitable traffic bead binder. Economical.
- **TYPE H SAFETY SPHERES**—Approximately fifteen times brighter than standard highway beads. For reflectorizing guard rails, curves, bridge abutments, safety islands, etc. Offer maximum reflectivity at lowest cost.
- **FLEX-O-LITE FREE-FLOWING TRAFFIC LINE BEAD DISPENSER**—New, simplified. Affords years of trouble-free operation. Ideal for municipal and highway use. Attaches to any traffic line paint machine. Satisfaction guaranteed.
- Ask about our Sign Bead Applicator.

FLEX-O-LITE MFG. CORPORATION

8301 FLEX-O-LITE DRIVE • P. O. BOX 3066 (AFFTON BRANCH) • ST. LOUIS 23, MO.

Short strips at right and the double line at left mark out the traffic patterns on Genesee Street, Auburn's main shopping artery.

Vinyl Chloride Lines on Genesee Street

City officials and City Manager George F. Train of Auburn, N. Y., recently authorized installation of plastic traffic lines on Genesee Street as a test section for a local company's product. The material is in strips about 1/14th inch thick, and is impregnated with reflective glass spheres. In laying down the material, the road is first cleaned and the mastic is sprayed. Next the striping is laid down and pressed with a roller. It is claimed that the road will need repaving before the lines will need replacement.

City Manager Train said he welcomed the opportunity to give the new material a good trial, but that the city's line-painting schedule was already under way for this year and any decision to shift to the plastic strips would have to wait until later.

Douglas Woodruff Jr., vice president of the Auburn Plastics Co., said that plastic strips cost about five times as much as painted ones, but would last 10 times longer. Thus the vinyl striping should reduce the cost of traffic lining by 50%.

Puts Overhead Signs Flush With Traffic

A new adjustable and self-leveling overhead sign-supporting bracket called Unabrac provides efficient, dependable and economical installation of signs supported by span wires and mast-arm posts. It permits a sign to be positioned at a right angle to the roadway, regardless of the angle or inclination of the cable to the roadway.

This bracket is constructed to provide safe performance under "hurricane wind" conditions and its resistance to corrosion permits prolonged outdoor use. It is offered in free swing and rigid styles. The free swing feature minimizes wind resistance and removes the danger of cable fatigue and wind damage to the sign.

The various sizes of Unabrac are adaptable to signs measuring up to 16 square feet; for larger signs, two or more brackets are required.

In intersection and channel signing the bracket can be easily attached to the cable or mast arm and adjusted to direct the message into the motorist's field of vision regardless of the angle of the cable or mast arm. Existing cables or poles can be used and in this way it is possible to effect savings in material, labor and time. The manufacturer is the National Bracket Co., 969 West Wilson St., Salem, Ohio.

Unabracs in use in Lakewood, Ohio.

Mercury vapor lighting on Monotube poles illuminate all the interchanges and the approaches of the Illinois Tollway.

Along the Illinois Tollway

A horse-drawn Conestoga wagon departed from Chicago's city hall recently for a five-day trek to Rockford, Ill. to dramatize the opening of the Northwest Tollway, the first completed phase of the Illinois Tollway system.

The wagon bore a message from Mayor Richard Daley of Chicago to Mayor Benjamin T. Schleicher of Rockford. In it, Mayor Daley expressed confidence that the superhighway would mean a new era in the relationship of Chicago to its neighbors.

The Illinois Tollway system consists of three roads belting the Chicago area and represents 187 miles of tollroads. The project was financed with $441 million of revenue bonds; after they are retired, the roads will be free. The routes have been designated the Tri-State Tollway, the Northwest Tollway and the East-West Tollway.

The Tri-State Tollway extends around Chicago, north to the Wisconsin line. The Northwest Tollway begins at the Tri-State Tollway and is 76 miles in length. On completion it will connect with a new interstate expressway across Wisconsin to Janesville, Madison and Minneapolis. The East-West Tollway, the shortest of the three, provides the best route for traffic between Chicago, Aurora and intermediate points. Beyond Aurora there will be a direct connection with U. S. 30 for traffic moving across the state.

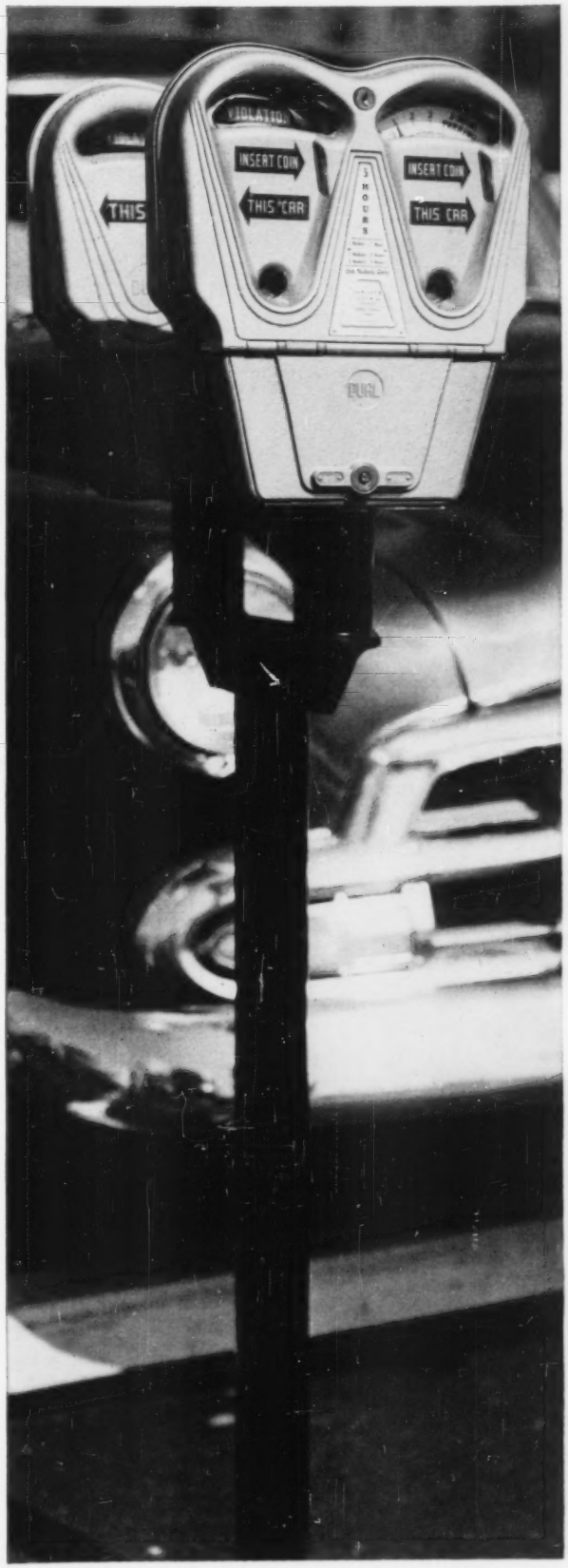
This outer belt highway system is linked to downtown Chicago by Edens Expressway and the Congress Street Expressway, providing convenient access to the Loop. Hence, whether a motorist wishes to enter or leave the city, or bypass it, his journey will be much easier on this superhighway network.

A modern lighting system at all interchanges and throughout the service areas is an important safety feature built into the Tollway system. A total of

The Illinois Tollway system.

4,148 Union Metal Steel Monotube poles, of several different types, were installed.

At interchanges, the poles are single and twin type, with either 8-foot or 12-foot truss-type bracket arms. They are used with mercury vapor lights at a mounting height of 32 feet. All poles in service areas and approaches are davit type. These include single and twin lights with 6-foot spread for fluorescent luminaires at 30-foot mounting height; also single poles with either 8-foot or 12-foot bracket spread and transformer bases for mercury vapor luminaires positioned at 30-foot height.



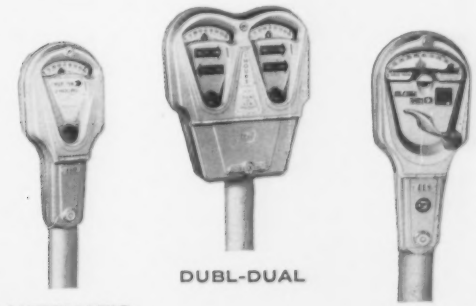
SLASH INSTALLATION COSTS UP TO

50%

WITH DUBL-DUALS

You save up to one-half on installation costs when you buy Rockwell Dubl-Dual parking meters, because two mechanisms are built into *one* case. Besides saving 23% on the initial cost, only half as many meter stands are required . . . on off-street lots you can put four meters on a single stand (see photo at left). This also cuts collection and maintenance time greatly and frees personnel for other revenue-producing jobs.

Dual, with 25 years of know-how, can also give you expert advice and assistance on street-marking, to accommodate more cars . . . on-street or off-street. For information on Rockwell's complete line of automatic and manual parking meters, write: Dual Parking Meter Company, Subsidiary of Rockwell Manufacturing Company, Pittsburgh 8, Pa.



AUTOMATIC DUBL-DUAL MANUAL

The only complete line of automatic and manual parking meters

DUAL PARKING METERS
another fine product by
ROCKWELL

From MAINE to CALIFORNIA . . .

Monotube Poles selected for these outstanding highways

Advanced engineering, appearance, ease of installation, minimum maintenance and unmatched experience . . . five reasons why Union Metal Monotube poles, both steel and aluminum, are specified for important roadways from coast to coast.

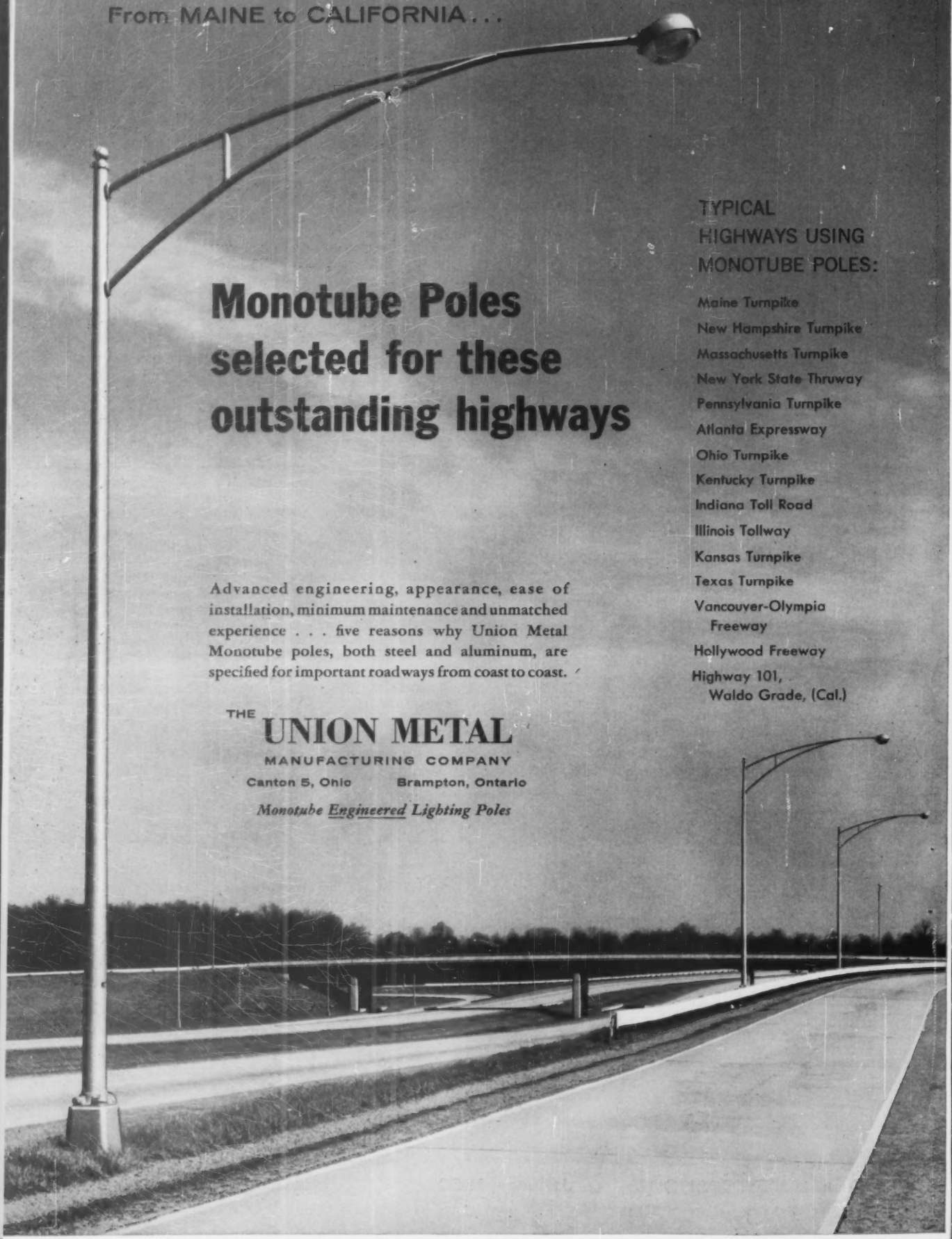
THE UNION METAL MANUFACTURING COMPANY

Canton 5, Ohio Brampton, Ontario

Monotube Engineered Lighting Poles

TYPICAL HIGHWAYS USING MONOTUBE POLES:

- Maine Turnpike
- New Hampshire Turnpike
- Massachusetts Turnpike
- New York State Thruway
- Pennsylvania Turnpike
- Atlanta Expressway
- Ohio Turnpike
- Kentucky Turnpike
- Indiana Toll Road
- Illinois Tollway
- Kansas Turnpike
- Texas Turnpike
- Vancouver-Olympia Freeway
- Hollywood Freeway
- Highway 101, Waldo Grade, (Cal.)



Modern Street Lighting By Remodeling

The Faribault, Minn., fluorescent system with remodeled standards that hold down cost was briefly described in THE AMERICAN CITY for November 1959. Here are some further facts on the subject:

Faribault has always believed in good street lighting. In 1946, the city installed 123 pendant incandescent fixtures in the business district using 10,000-lumen lamps at 26-foot mounting height. A maintained average of just over one footcandle was provided on the street. This system replaced older upright lights.

When many communities install a new street lighting system, they appear to be satisfied with it for 20 to 25 years or more, but not Faribault. By 1957 this town's officials and businessmen were no longer satisfied with their lighting. Only ten years old, the installation obviously was still in good condition. Instead of spending the money for an entirely new system, davit extensions on existing poles offered a solution.

These davit extensions fit over the top of the old poles and fasten securely to them. They provide mounting heights of 29 feet and a modern appearance while utilizing all of the existing system except the old bracket arms and luminaires. New Line Material fluorescent luminaires of the four-lamp, deep-globe type, rated at 23,000 lumens, increased light on the street to 1.5 footcandles, but of greater importance was the fact that they more than doubled the light in the area, making the business district brighter and much more attractive.

Luminaire on remodeled Millerbernd lighting standard (left) and a 1946 pendant incandescent luminaire (right).

That is the aim, of course, to attract night shoppers, increase safety, and make the city more pleasing to citizens and visitors alike.

G. G. WHEELER
Manager, Municipal Sales
Northern States Power Co.
Minneapolis, Minn.

Lighting Equipment for Hurricane Winds

The City of Miami recently has installed 400-watt Westinghouse OV-25 mercury vapor luminaires on the Bakers Haulover Bridge in Miami, Fla. The purpose was accident prevention. The luminaires are spaced on 100-foot staggered centers and are mounted at 30 feet on tapered aluminum lighting standards. The aluminum supporting arms are 6-foot truss-type tapered elliptical construction.

This extra rigid design, plus a heavy-duty shaft, was used in order to meet the exceptionally high wind load requirements of 150 miles per hour. The lighting standards were supplied by Pfaff & Kendall.

A Beacon As Well

The installation is not only accomplishing its original purpose of accident prevention but it is also said that the Haulover Bridge acts as a beacon for incoming boats.

New lights on the Haulover Bridge.

F-P Sent to Washington ...Capital Gains

PEPCO REPORTS DEPENDABLE OPERATION WITH MERCURY VAPOR LAMPS, NO FALSE TURN-OFF FROM HIGH AMBIENT OR LIGHTNING

Potomac Electric Power Company now has in operation several thousand Fisher-Pierce Series 6600A controls, the majority on mercury vapor luminaires fed by underground 120-volt secondary lines. Despite the fact that Washington is an area of many thunderstorms, there have been no reported cases of turn-off by light from lightning flashes. The Fisher-Pierce controls have also proved particularly useful in areas with nearby bright lights, since the directional design of the control permits orientation away from electric signs and other sources of strong artificial light.

PEPCO first began using Fisher-Pierce controls in 1957, and the number has grown until now F-P Series 6600A's comprise approximately 45% of all the individual controls in PEPCO territory — the District of Columbia and nearby areas of Maryland and Virginia. As the photos indicate, the variety of locations necessitates installation flexibility as well as dependability in the photo-electric controls.

GRAY COLOR and compact design of the 6600A Series control matches the modern PEPCO streetlight poles. All downtown structures in Washington—including streetlighting equipment—must meet rigid appearance standards.

PROGRESS IN WASHINGTON

Incandescent series streetlights are being replaced by new mercury vapor types, individually controlled by Fisher-Pierce 6607A models. The short time delay permits fast checking of the control. Below, PEPCO Mechanic E. E. Mayfield explains control installation to Junior Mechanic C. F. Madigan.

For complete design information and specifications on Series 6600-S controls, write The Fisher-Pierce Co., 94 Pearl Street, South Braintree 85, Massachusetts.

FISHER PIERCE

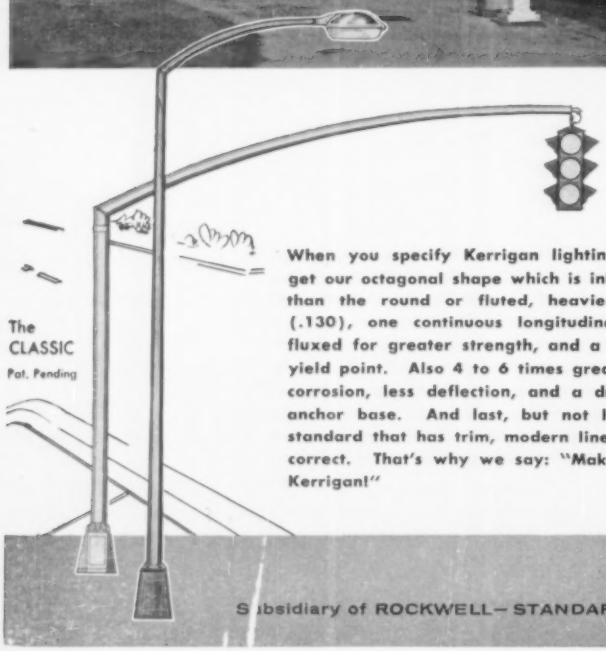
PHOTOELECTRIC LIGHTING CONTROLS

AN AFFILIATE OF SIGMA INSTRUMENTS, INC.

Improve *YOUR* Street Lighting

MAKE YOUR *STANDARD*

KERRIGAN



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When you specify Kerrigan lighting standards you get our octagonal shape which is inherently stronger than the round or fluted, heavier wall thickness (.130), one continuous longitudinal weld magna-fluxed for greater strength, and a guaranteed high yield point. Also 4 to 6 times greater resistance to corrosion, less deflection, and a drop forged steel anchor base. And last, but not least, you get a standard that has trim, modern lines, architecturally correct. That's why we say: "Make Your Standard Kerrigan!"

Our new 70-page catalog has the engineering facts on both steel and aluminum standards! Won't you write for your FREE copy now? *Address:* Dep't. A-I.

KERRIGAN
IRON WORKS COMPANY
Nashville, Tennessee

Subsidiary of ROCKWELL—STANDARD Corporation

The City of Englewood, Colorado, Is Relighting in Five Annual Steps

In July 1957, the City of Englewood and the Colorado Central Power Company entered into an agreement whereby the company was to pay a gross receipts tax to the city on electric energy sold, in exchange for a franchise extension. At the same time the City Council called upon the Colorado Central Power Company to assist in designing a five-year program to modernize the city's lighting, especially on traffic arteries and in residential areas.

Prior to this time street lights of 1,000 lumens had been installed at alternate intersections within the city except in the central and in one secondary business district. In these commercial areas mercury vapor lighting of the 20,000-lumen Westinghouse OV-20 type had been installed over ten years ago and is still modern and powerful.

The new plan calls for the installation of 21,000-lumen mercury vapor luminaires spaced 165 feet apart on the city's major arteries and 11,000-lumen mercury vapor lights in adjacent commercial areas.

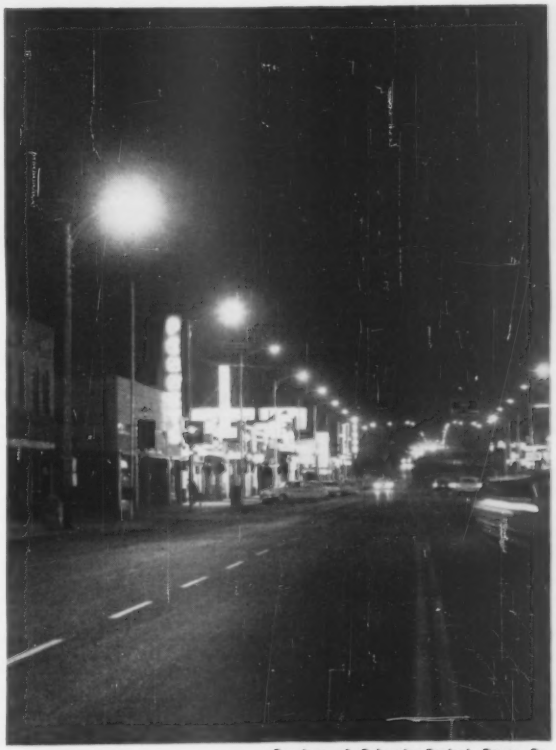
In 1959, all remaining major arteries were lighted with the 11,000-lumen mercury vapor lights, and 6,800-lumen mercury vapor lights were installed at all residential intersections in the north third of the city.

In 1960, the city will install 11,000-lumen mercury lights along all minor arterial streets as well as 6800-lumen mercury vapor lights in the middle third of the city.

In 1961, the final third of the residential intersections will receive 6,800-lumen lights. At the same time lights will be installed in the north third of the city at mid-block in all residential areas. (Englewood blocks are 600 feet long).

In 1962, the mid-block installation will be made in the middle third of the city and in 1963 the final third of the residential area will have the 6,800-lumen mercury vapor lights at mid-block.

The program is financed as a general fund operation. It will raise the city's annual payment for street lighting from $20,000 annually in 1957 to $80,000 annually in 1963. The power company furnishes and installs the luminaires—all Westinghouse—and replaces and maintains them as needed. The rate to the city includes these services as well as electric energy consumed.



Courtesy of Colorado Central Power Co.

South Broadway, in the central business district, is lighted by 20,000-lumen OV-20 mercury lamps, 165 feet apart.

JOE M. LACY
City Planning and Traffic Director
Englewood, Colo.

Fluorescents Ease Panama Canal Traffic

Modern fluorescent lighting will ease night-time traffic at the three Panama Canal locks. It will also allow round-the-clock operation, where previously the locks have been closed from dusk to dawn. Ships caught at the canal entrance in late afternoon have been waiting until the following day to start their passage.

The lighting installation is scheduled for completion in March or April 1960, at which time 24-hour operation of the canal's three locks—Pedro Miguel, Miraflores, and Gatun—will begin.

The 1,300 General Electric fluorescent luminaires are part of a $500,000 contract which includes transformers and wiring.

About 750 six-foot, two-lamp units are mounted on the edge of the walls of the locks, lighting the area at the water's edge where electric "mules" pull ships through the locks. The luminaires are on 20-foot aluminum poles, hinged at the base so they will swing down and away from the locks' walls when extra-wide ships pass through the canal.

Some 500 fluorescent fixtures—similar to those used in traffic tunnels—are installed on the side of the locks themselves to indicate clearance for the ship's pilot. Fifty floodlighting fixtures illuminate the control houses.

An over-all expansion plan has been undertaken by the Panama Canal Co. The channel in the southern portion of the Gaillard Cut has been widened from 300 to 500 feet. The canal's usage increased from 6,000 ships a year before the war to an anticipated 10,000 ships in 1959.

PARK-O-METER Pioneer IN AUTOMATION

Long before coining of the word AUTOMATION, Park-O-Meter pioneered in the field of automatic operation which, today, is sweeping into every activity around the world.

Park-O-Meter . . . the first complete, automatic parking meter . . . was then, as today, the world's most MODERN parking meter.

Ask for detailed information regarding the latest model Park-O-Meter. Compare before you decide.

Ask for detailed information covering our completely automated PARK-O-GATE and *Ticket Spitter* Systems, for municipal or private off-street, self-service parking facilities.

Magee-Hale **PARK-O-METER COMPANY**

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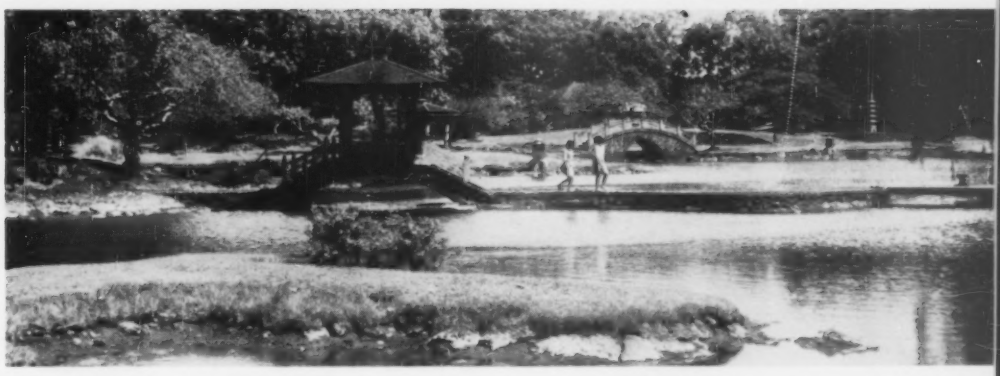


Hilo, the second largest urban area, rebuilt a district destroyed by a tidal wave, making it into this charming Japanese park.

Hawaii—The State Without a City

. . . but the state with the least cluttered metropolitan government in the nation

By **WILLIAM S. FOSTER**, Editor, The American City

There will be no League of Hawaiian Cities in the nation's 50th and youngest state. Superficially, this is unfortunate; no state in the Union has more beautiful places to hold league meetings than Hawaii. Actually, it is interesting, and challenging to those responsible for urban government in this, the nation's most beautiful state. Those who conjecture about urban growth under a centralized government without complicating political fractions now have an opportunity to see.

This new state has not, nor has it ever had a layer of government more localized than the county form, and had to work hard to get even this. It has no city, town, village, or township groups. Even internationally famous Honolulu was governed by a county board of supervisors until last year. This metropolitan area recently changed to a strong-mayor form in order to simplify its government and place responsibility where it rightfully belongs. Mayor Neal S. Blaisdell administers an area unduplicated anywhere else in the nation. Here are some of its characteristics:

- **His is the only urban government that also embraces large farming areas—of sugar cane, pineapple, various fruits, taro, rice.**
- **This is the only urban government that encompasses large installations of the army, navy and air force.**
- **This is the only large urban concentration with no government fractions. Schools are operated under a single state-supervised district.**
- **This is one of the few urban areas in the nation that does not operate its own police system. In the 50th state, the governor appoints the police commissions for each of the four counties.**
- **It is the only urban area in the**

(Continued on page 125)

Honolulu's gracious Spanish-style municipal building is still known to many as the county building.

Downtown Honolulu automatically honors the pedestrian's right-of-way on any crosswalk and does this as much by courtesy as by ordinance.

* Mr. Foster's account of Hawaii's urban areas is based on a visit he made there last year when the people were, for the first time, electing their Governor.

Operate the sanitary landfill — using clamshell or dozer action to spread refuse evenly. Then use "carry-type scraper" action to cover the refuse evenly on-the-go. And then iron down the cover with compactor plate action for a positive seal!

Only the clam-action 4-in-1 gives you built-in "equipment

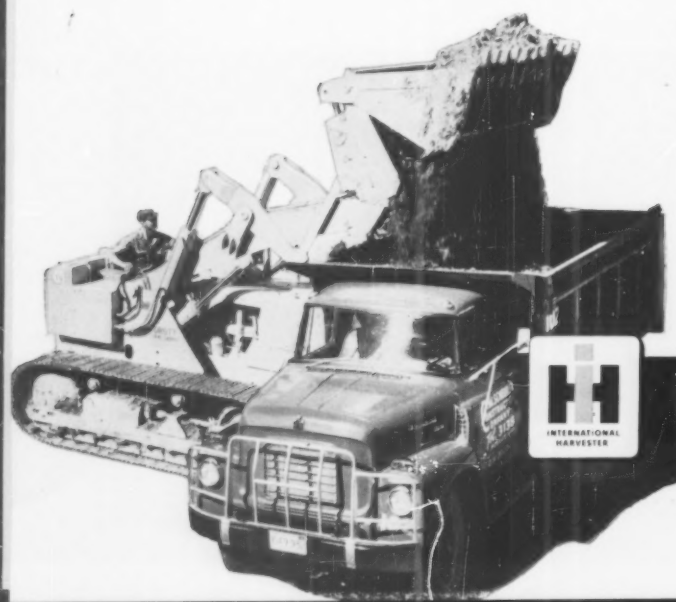
As "standard equipment" at no extra cost the exclusive clam-action International® Drott® 4-in-1 gives you the utility of a whole fleet of specialized machinery!

The four actions of the 4-in-1 are built in! Each action is instantly available for big-capacity performance, at your touch of the "machine-selector" lever!

Skid-Shovel action puts power-shovel-like pry-over-shoe break-out action at your command. Bulldozer action gives you a "radius-controlled" blade that can dig and move earth like a specialized dozer. "Carry-type Scraper" action can grade, strip, and spread with inch-close accuracy. Clam-shell action can back-drag materials; boil itself full on-the-go; stand and grab hard-to-handle materials; give positive, self-clean-out bottom dumping!

You get all four of the inbuilt actions for the 4-in-1's one moderate price. Each 4-in-1 action "doubles" for one or more specialized machines. You adjust and control hydraulically each 4-in-1 action to get an amazing range of job-handling working positions!

Add up the thousands of dollars you'd save with the 4-in-1 to handle your community's sanitary landfill, as no "single-action" loader can—and to give 4-in-1 multi-operation utility, all over town! See your International Drott Distributor for a demonstration!



Eliminate the sticky materials handling problem, with exclusive clamshell bottom dumping. Opening the clam pulls sticky materials from clam surfaces—gravity pull does the rest, to dump sticky materials that stop ordinary loaders cold!

Dig up "tired" street surfacing using famous 4-in-1 pry-over-shoe break-out action. The TD-15 4-in-1 can exert 39,200 lbs. of break-out force—ample to dig up and load out old brick-and-mortar pavement—and take slam-bang tough jobs from boom-type rigs!

International Harvester Company, Chicago 1, Illinois
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Rough-out a new street or drive, and remove excess material at the same time—using 4-in-1 "carry-type scraper" action for rough and finish grading. Spread surfacing materials with "scraper" action or spot-place it with clamshell!

You can sit, grab, and lift tough-to-handle "impossibles" like stumps, slabs of concrete, and other materials—as no other equipment can! Four-in-one clam-action is the *only* answer!

fleet" utility!

Only THE DUNCAN V. I. P.*

offers

Vault Insured Protection*

World's first parking meter purposely created to combat the costly destruction of vandalism and theft of meter revenues. Exhaustive tests prove Duncan's V.I.P. is the answer to this serious ever-increasing problem which plagues almost every city, big or small.

Backed with insurance — by Duncan. Further evidence that the Duncan V.I.P. represents the highest degree of security ever found in a parking meter, Duncan backs its V.I.P. with *written* insurance. With each V.I.P. meter order, Duncan issues a one-year insurance policy indemnifying the city against physical loss due to vandalism. This policy is issued and paid for by Duncan.

V.I.P. exclusive Submerged mystic-lock* increases security to the coin compartment. Non-exposure greatly reduces malicious lock area vandalism.

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DIVISION OF MOTOR PRODUCTS CORPORATION

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The World's Leader in Parking Meters

In Hilo, colorful, owner-operated sampan buses provide a personalized rapid-transit service.

Within Honolulu's metropolitan complex are mountain ranges, roads, and traffic tunnels like these.

nation with two spectacular mountain ranges within its borders.

● It is the only urban area that has no difficulty defining its limits.

● It is an urban concentration not served by rail or highway.

This peculiar framework of government with no local-level responsibility did not develop because of any lack of interest in democratic principles. William F. Quinn, the new state's first elected governor, records that when Hawaii was an independent nation, King Kamehameha III gave his people a constitution which established a house of nobles and also a lower house whose representatives were elected by the people. John A. Burns, the Territory's last Congressional delegate, has noted that its overthrow, in 1893, through the collusion of the U. S. Minister, a contingent of Marines, and a group of insurgents, was decidedly unpopular on the islands.

He also records that this insurgent ruling group rejected an early suggestion by Senator Morgan of Alabama that the new territory apply for statehood. This ruling coalition also tried to limit suffrage and thereby solidify its power by making property ownership and income qualifications for the right to vote. However, Senator "Pitchfork Ben" Tillman of South Carolina spearheaded Congressional action that thwarted this undemocratic move.

Mr. Burns also notes that the early territorial government was completely centralized. Those in power agreed with reluctance to the establishment of counties only through firm Congressional prodding.

Since Honolulu embraces the largest population in the new state and, since it has just changed its charter to a more "urban-like" form of government, it justifies a somewhat close examination.

Honolulu's new charter provides for the election of a mayor and nine councilmen. Of these, six are elected at large and three represent their districts. The charter provides the mayor with broad appointive powers, requires that only the planning director and corporation counsel be approved by the council.

The charter replaces the Comptroller's office and an elected Treasurer with an appointed Finance and Budget Director. The city's finances also are subject to an independent audit either annually or biannually.

The new charter replaces the old, semi-independent Board of Parks and Recreation with a Department of Parks and Recreation, assisted by an advisory citizen board.

It replaces the old planning commission with a Department of Planning whose director reports to the mayor. It places the old Zoning Board of Appeals in this new department.

The charter abolishes the elected posts of Auditor, Sheriff, Clerk and Coroner. The Clerk is now appointed and a Medical Examiner has taken over the duties of Coroner.

The charter reduces the size of the Department of Public Works by removing the traffic and street-lighting section, making this a separate department. It does not involve the autonomous Board of Water Supply. This board, while self-supporting and divorced from the city, nevertheless has Honolulu's Chief Engineer, Yoshio Kunimoto, as a member. It reports both to the state and to the city-county. At one time, there were two water systems on the island. However, two years ago, the "surburban" portion merged with the "urban," making one island-wide water utility.

The services provided by this government reflect its urban-rural character. For example, the Department of Public Works has a business-like central maintenance shop geared to care for street, street cleaning, and refuse collection services. Yet it also maintains seven maintenance yards in the rural areas that care for the relatively narrow country-type roads.

The department also has an aggressive and forward-looking sewerage program under way that eventually will produce a number of sewage purification plants. At the same time the department provides the unusual service of pumping out, free of charge, some 20,000 cesspools, using a fleet of trucks

ALL NEW OLIVER OC-9

the tractor that TALKS for itself!

with TRANS-O-MATIC drive

Check all these exciting new features in an on-the-job demonstration!

NEW! Counter-rotating tracks
OC-9 turns on its own axis! Shortest turn of any crawler. Gets in and out of tight spots fast. Exclusive with Oliver on this size tractor. Also, spot turns and gradual turns.

NEW! Torque converter
Pull or push twice the pay loads at slow speeds. Eliminates all clutching and gearshift guessing. Uses most effective horsepower.

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Shift from forward to reverse instantly. No clutching, no clashing of gears with all-hydraulic transmission. Four speeds forward, 0 to 5.94 m.p.h. Four speeds backward, 0 to 7.92 m.p.h.

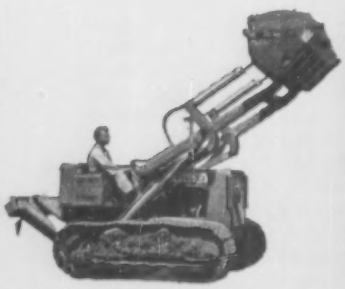
NEW! More efficient power
Get more work done more economically. New diesel engine with 62 gross h.p. plus new torque converter, gives you exceptional power efficiency.

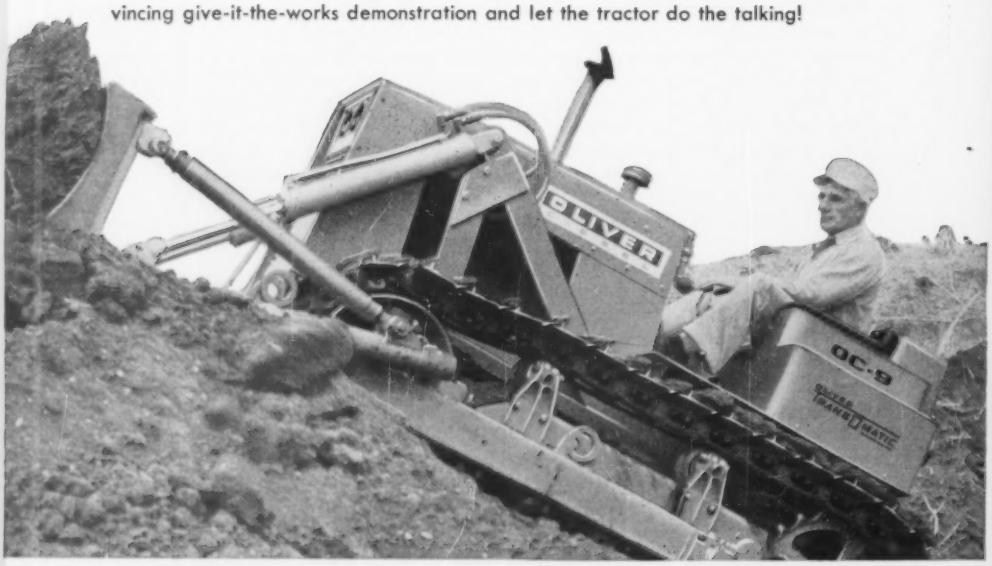
NEW! Functional design
Truly modern from end to end, from the ground up. Easy-handling, finger-tip controls, with convenient power steering. Seat is offset for greater visibility. Oliver-matched equipment includes bull-dozer, angledozer, scarifier, winch and loader.

See for yourself what the husky, new OC-9 can do for you...how it'll step into those tough jobs and step up production. See your Oliver dealer for a convincing give-it-the-works demonstration and let the tractor do the talking!

All New OC-96 Crawler Loader

with low-profile design, greatest stability, maximum visibility. Completely Oliver-designed for high-speed digging and loading work. One-yard bucket. Has all the other features of the new Trans-O-Matic OC-9.





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LOOK TO OLIVER FOR YOUR BEST BUY IN WHEEL AND CRAWLER TRACTORS

with Gorman-Rupp pumping equipment.

The department operates two incinerators and sanitary fills, and collects from both urban and rural refuse contributors. The Department of Street Lighting and Traffic, while studying ways to bring better lighting to the less populated areas, also has an ambitious program of multideck off-street parking, complete removal of parking from certain areas, adjustment of parking meter rates, complete revision of traffic control, and elimination of the confusing "scramble" system of pedestrian crossing at street intersections.

The Fire Department, headed by Chief William Blaisdell, uses a combination of paid and volunteer firemen to provide island-wide protection. He has been relying on a Gamewell system of alarms for more than 20 years and has developed a system of mutual aid with the Army, Navy and Air Force fire-control crews that has been helpful to all involved. On one occasion, he sent a fire boat to a neighboring island to help put down a particularly bad fire. However, the distances that are involved do not encourage that sort of assistance between islands.

The Police Commission, a state agency headed by Chief Dan Liu, patrols the entire island, keeping contact by two-way Motorola radio. Each man on motor patrol owns his own car and is given a cash allowance which is based on mileage plus gasoline, oil, tires, repairs and insurance.

While the commission is a state agency, Chief Liu is studying the possibility of a tie-in with the Fire Department's Gamewell system of protection.

Outer Islands

On the "outer islands," the old county-form of government still remains, with little reason to revise it unless some of the small urban areas ask to establish local governments. The County of Hawaii, known locally as the "Big Island," is typical. It has a seven-man Board of Supervisors. The Chairman and Executive Officer is elected at large and will not be annoyed if he is addressed as "Mayor." The County Attorney, Auditor, Clerk and Treasurer also are elected. The "Big Island" is lightly populated, has active volcanos and is almost savagely beautiful. The slashing black paths of lava flows show the youth of the island. It has the greatest variety of scenes, from a coastal tropical appearance, to a harsh, cactus-studded inland cattle-ranch scene and the brutally-striking smoldering volcanos that only last year put on a fiery performance.

On this island, in the Hilo area, nature stimulated a gracious urban renewal program by the rough-handed method of a tidal wave. When the wave receded, it took along shacks and ungainly frame buildings from the shoreline, making it possible to reclaim the area by building a beautiful Japanese park and extensive off-street parking areas.

Much of the island is without water supply, except for what it can recover from rooftops. All the rest has to be trucked and, until the island can support an overall network of water mains, its economic growth will remain stunted.

Hilo has a picturesque, rugged-individual type public transportation system, consisting of "sampan buses," owner-operated. These consist of old passenger cars, remodeled

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You can be sure you're making the best buy in street name assemblies and traffic control signs when they are Miro-Flex. These high-quality signs are embossed to provide extra strength, rigidity, and legibility. They are finished to perfection for years of service in the most rugged of conditions. Miro-Flex can fulfill practically all your sign requirements and at prices that fit your budget year after year. Write for your free copy of the Miro-Flex catalog and prices.

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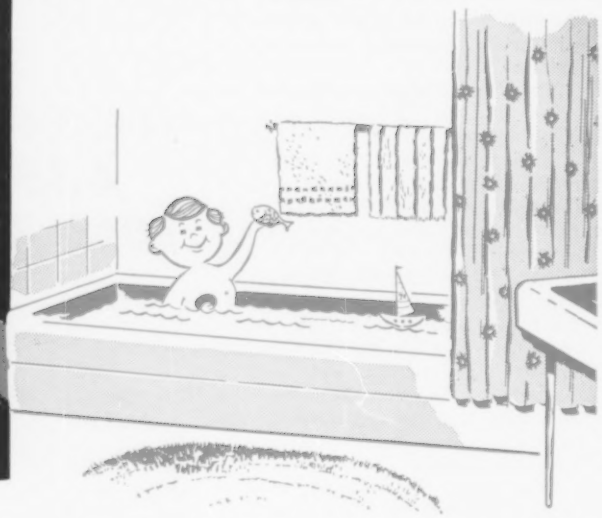


RIGID PIPE SUBMERSIBLE PUMP INSTALLATIONS OFFER NEW PROOF OF SUPERIORITY OVER CONVENTIONAL PIPE

BE *ABSolutely* SURE . . .
INSIST ON RIGID *ABS* PIPE
made of
CYCOLAC
THE BORG-WARNER PLASTIC THAT IS TOUGH, HARD AND CORROSION-RESISTANT

In municipal installations . . . in irrigation lines . . . in sprinkling systems . . . and now in submersible jet pump installations, rigid pipe made of Cycolac ABS is demonstrating its ability to out-perform conventional pipe! Highly tensile and rustproof, it is recommended by submersible pump manufacturers for 100-ft. and deeper wells. Tasteless, odorless and non-toxic, it is fully NSF-approved for carrying drinking water. Swiftly installed and connected, it is acclaimed by submersible pump installers everywhere—saves 50 to 75 per cent over metal pipe installation costs! An added feature—servicing a unit suspended from lightweight rigid pipe is relatively simple!

Write for the name of your nearest supplier

MARBON CHEMICAL
WASHINGTON

MARBON CHEMICAL
B-W
BORG-WARNER

DIVISION **BORG-WARNER**
WEST VIRGINIA

by local mechanics, to accommodate eight to ten passengers.

On all the islands, the gasoline tax is heavy and is used to build and improve the charming, but narrow, winding roadway system. On some of the islands, this narrows to no more than ten feet with blind, hairpin curves. The state imposes a 5c tax which is used for the state network of highways. The counties impose an additional tax that varies as follows:

Hawaii	**6c**
Maui	**5c**
Kauai	**4c**
Honolulu	**3½c**

The entire state has only one water filtration plant as such and this is a small installation on the Island of Kauai where a community in a relatively inaccessible area has to depend on a surface supply. Here, the county, under its water-works engineer, Lawrence Nishikawa, has installed a Permutit valveless filter plant plus chlorination facilities. In the rest of the area the county depends on ground-water supplies typical of those in use elsewhere.

The people in this new state are land hungry, and property here is surprisingly expensive. Governor Quinn, a Republican, won substantial support from normally Democratic voters by proposing a "Second Mahele." This is a land apportionment program, named after King Kamehameha's original program of land distribution. The success or failure of the Governor's administration rests largely on whether he can be as successful as the colorful old monarch.

At the same time, political scientists throughout the nation will keep a watchful eye on the government of the 50th state, and particularly of its peculiarly individualistic urban complex, Honolulu. All will want to see whether Mayor Blaisdell and his Council can use the simple, uncluttered governmental machinery to provide better, more efficient government than can leaders in urban areas elsewhere, who are forced to adjust their administrations to the complications of independent suburbs, various autonomous districts, commissions, authorities, defiantly independent school boards, and in many areas, unfortunately located state boundaries.

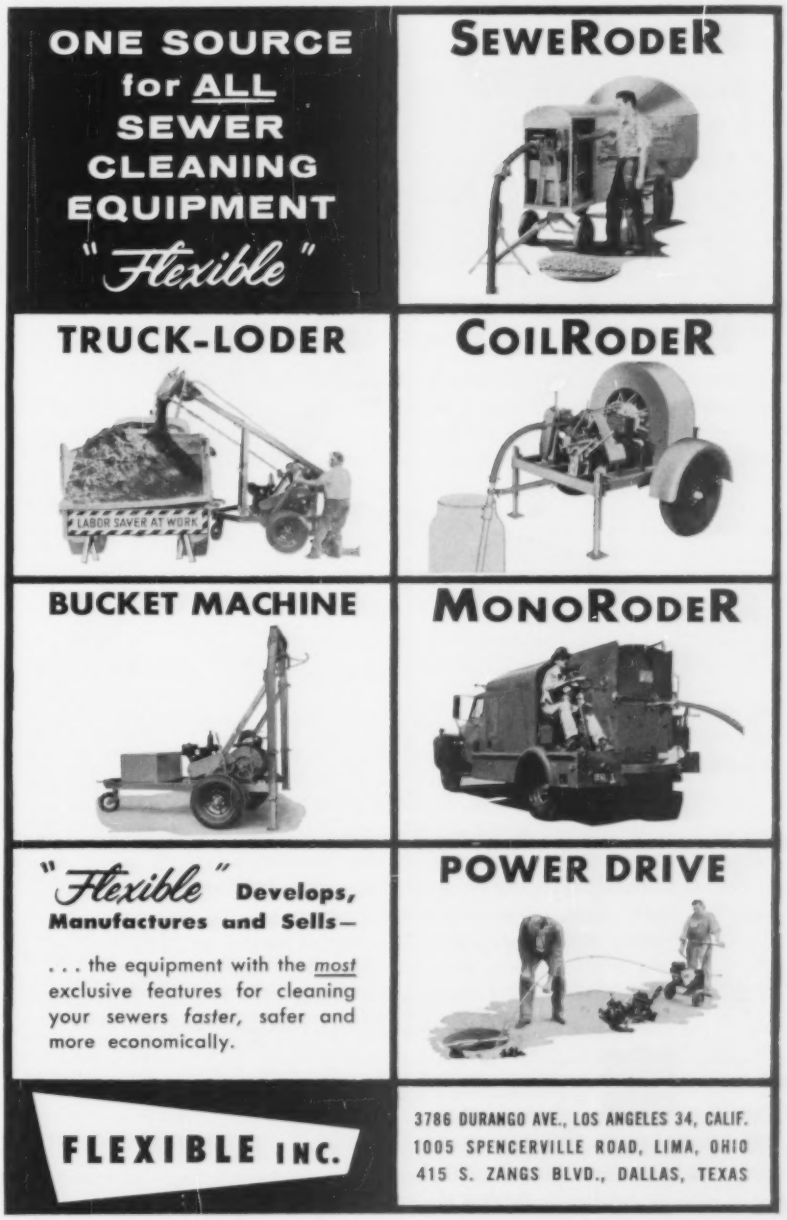
Honolulu's success or failure will have an influence on the trend of local government structure, far greater than most realize.

Pitfalls in City Engineering Contracts

A city engineer or consulting engineer frequently will run into trouble preparing public construction contracts. This was explained by Mr. Richard H. Tunstead of Spencer & Tunstead, Attorneys, New York City, at the recent New York section meeting of the American Water Works Association. The preparation of these contracts, he explained, is not an engineer's work but an attorney's, and most engineers who try it do not do it very well. Engineers are disciplined to express themselves with formulae and figures while attorneys are disciplined to the use of words as their tools. In the drafting of contracts, clarity of expression is of primary importance.

In preparing these contracts, Mr. Tunstead advised the engineer to:

1. Draw specifications so that they clearly tell the contractor what he



What 500 other Cities have done YOU CAN DO with...

MI-CO MANUAL PARKING METERS

Clear across this country and in foreign lands, MI-CO Manual Meters for twenty years have proved their capacity for uninterrupted service, high productivity, long life and low maintenance cost. Some original installations are still in use after fifteen years. With only six moving parts they operate in hot, cold, wet or dry weather. Correctly engineered, structurally rugged; all parts made of stainless steel, clock brass and brass forgings, or die castings. Meters may be set for any number of hours, on various coin combinations. Pay for themselves in short order. Write for complete information about MI-CO Manuals, Twin Automatics, and the Security Collection System.

M ABC *A Symbol of High Quality*

MI-CO PARKING METERS, P. O. BOX 668-A, COVINGTON, KENTUCKY

(The Michaels Art Bronze Co., General Offices and Plant, Erlanger, Kentucky)

OTHER MICHAELS PRODUCTS: Architectural Metal • Curtain Walls
Display Cases • Reversible Windows • Tablets • Memorials • Signs

must do and under what conditions.

2. Ask the contractor to take no risks which good engineering can avoid.

3. As far as possible work out payment schedules so that there can be no unbalancing of bids. Contractors love to unbalance bids. It gets them payment for their investment in the job in the early stages of the work.

4. If there are errors or omissions in your plans, go to the owner, admit the error and try to overcome it by a fair agreement with the contractor.

5. Require an attorney to take the responsibility for preparation of the contract form itself and for seeing that it dovetails into your other documents.

6. Be fair and reasonable in your inspection and requirements.

7. Finally, avoid the position: "I am only requiring the contractor to do what the book says he must do." This assertion generally means that you are requiring him to do far more than the contract requires.

Cheap Fast Transit To Reduce Congestion

City Solicitor David Berger of Philadelphia, Pa. invited every social, church, and service group to share the inaugural train ride as "Operation Northeast" guests with Mayor Richardson Dilworth and other city and transit officials of Philadelphia.

"We are hoping that community leaders who ride the train will encourage the members of their organizations to use the service also," Mr. Berger said. "Everyone who uses it once is sure to become a regular customer for all downtown trips."

"Operation Northeast," a 33-week experiment, will cut fares, now 45 to 56 cents, to 30 cents, add eight extra trains daily, and offer novel bus-train transfers at four stations. Its trains will make the Fox Chase to Reading Terminal run in 30 minutes, faster either than subway-and-bus connections or automobile.

The city is a co-sponsor with the Reading Railroad and Philadelphia Transportation Co. to help preserve high-speed service and to reduce automobile traffic now clogging the highways and city streets. It is similar to "Operation Northwest" which in less than one year boosted the number of riders in Germantown-Chestnut Hill rail branches by better than 20%.

BRUSH DISPOSAL CREWS OPERATE FULL TIME WITH THE TROUBLE-FREE FITCHBURG CHIPPER

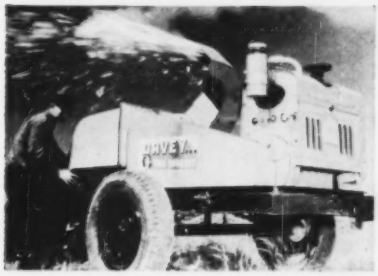
CITY

This low-maintenance Fitchburg Chipper is disposing of brush in the City of Holland, Michigan.

UTILITY

"Our men have been particularly pleased with their Fitchburg Chippers . . . they are rugged and reliable."

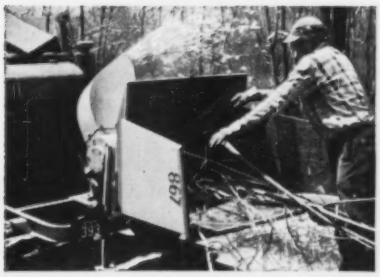
Rockland Light & Power Company
Nyack, New York



TREE COMPANY

"We have never had one (Fitchburg Chipper) wear out or give excessive trouble." Chipper still operating after 9 years.

Davey Tree Surgery Co. Ltd.
San Francisco, Calif.



PUBLIC WORKS DEPT.

"Our Fitchburg Chipper consolidates the bulk, thereby lessening dumping operations. It requires minimum maintenance and manpower."

Dept. of Public Works
State of Rhode Island

When crews go out to trim trees, it's costly to have machine breakdown. That's why foresters, park superintendents, line clearing supervisors, and tree companies prefer the Fitchburg Chipper. This well-engineered brush chipper is designed for busy, trouble-free service, no down-time.

The rugged Fitchburg Chipper requires little upkeep, and has low maintenance cost. It's economical to operate. And crews like the exclusive spring-activated feed plate which adjusts itself automatically to any size brush up to its rated capacity. This patented feed-plate provides protection from damage from foreign materials, makes for greater crew safety.

The Fitchburg Chipper is engineered to work fast, safely, and to be always "ready to go." It's the chipper which won't slow down your crews, lets you plan their work intelligently—saves you time and money.

Please send in the coupon for more information, and for copies of articles on chipping which appeared recently in leading publications. These feature articles describe five methods of brush disposal and ten new ways to utilize "by-product" chips. Send for your copies, they are well worthwhile.

FITCHBURG ENGINEERING CORPORATION
Dept. AC-61, Fitchburg, Massachusetts

☐ Please send me important articles which describe 5 methods of brush disposal, and 10 new ways to utilize brush chips.

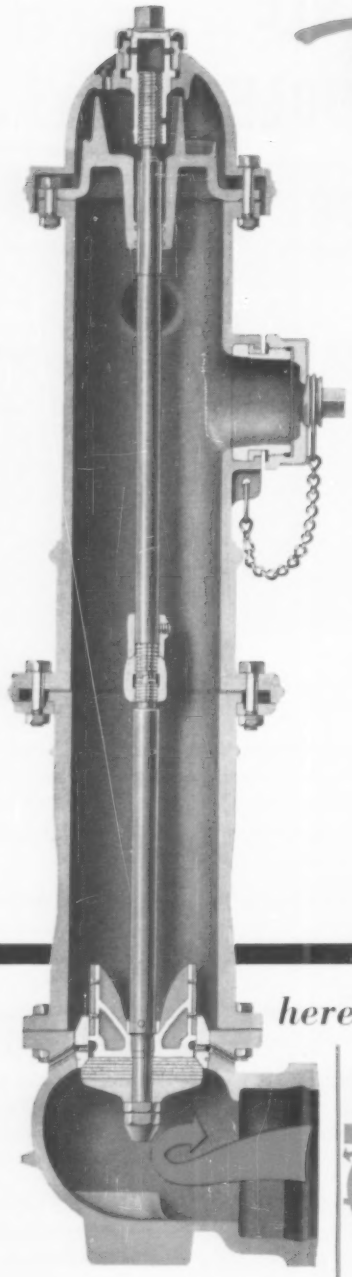
☐ Please send more information on Fitchburg Chippers.

Name_____

Address_____

City_____ Zone____ State_____

FITCHBURG ENGINEERING CORPORATION FITCHBURG, MASS.



Bonus features

for long life and easy maintenance

Designed for above ground maintenance, Mueller AWWA Improved Hydrants have the bonus features that *count*.

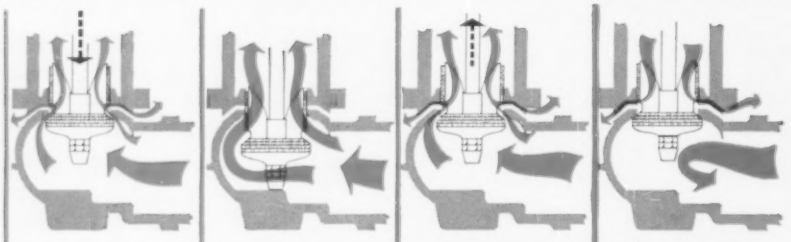
The compression-type main valve and two drain valves positively shut off the flow and drain the barrel after each operation.

Safety Flange design prevents barrel breakage resulting from traffic accidents and permits addition of barrel extensions to raise hydrant in keeping with grade changes.

360° rotation of the upper barrel permits proper facing of the breech-locked nozzles. Dry-top design seals all stem threads and bearing surfaces from water in the barrel during operation. A refillable oil reservoir maintains proper lubrication of the stem threads and bearing surfaces.

Add up these "bonus features" in Mueller AWWA Improved Fire Hydrants and you'll see why so many cities and towns have "Standardized on Mueller".

here's how the MUELLER *main valve works:*



1 Main valve fully closed. Barrel dry.

2 Hydrant opening. During first few turns of operating nut, full water pressure flushes drain ports.

3 Hydrant fully opened. Drain ports closed by sealing surfaces on main valve guides.

4 Hydrant closing. Drain ports again force-flushed by full water pressure during last few turns of operating nut.

5 Hydrant fully closed. Water draining from barrel through open ports.

For complete information and specifications, write direct to:

MUELLER CO. Since 1857 SERVING the Water and Gas Industries QUALITY

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles; In Canada: Mueller, Limited, Sarnia, Ontario.

Charges for Construction Work

. . . and other temporary connections

The task of supplying water for construction work, for carnivals, fairs and other temporary events constitutes a small but annoying part of the general overall water service. Nevertheless, in an efficient water works, a detail like this must be fair, self-supporting, and uncomplicated.

Theoretically, a water works should charge a building contractor, or any other temporary user, on the basis of the amount of water delivered. Many water utilities follow this policy and set up a metered schedule, generally similar to the commercial rate. Danville, Pa., is representative. Its rate is 23c per 1,000 gallons plus a minimum monthly meter charge varying from $1.15 for a ⅝-inch meter to $80 for an 8-inch meter.

The Kent County Water Authority, West Warwick, R. I., also charges at its regular metered rates. In addition, it makes the following charges:

- **cost of the meter and its setting.**
- **connection charge.**
- **cost of removing the service.**

The authority insists that all these charges must be paid in advance and that money shall be deposited covering the estimated amount of water to be used in the work. The authority refunds the difference if the amount used is not equal to the estimate.

However, many temper the theoretical with the practical. One does not always have good reason to insist on a full-scale meter connection when the contractor wishes to use the water only for a few days. As a matter of practical convenience, a water utility often is better served by making a flat charge and supplying the water through a fire hydrant or other unmetered connection. San Francisco, for example, will provide water on an unmetered basis, charging at the following rates:

For concrete, brick or other masonry construction, per cu. yd.	**11.0c**
For each barrel of cement or lime, for any purpose	**11.0c**
For grading streets, including water in steam rollers, per 100 sq. ft.	**8.6c**
For settling earth fills, grading and backfilling trenches, including water for rollers, per cu. yd. of earth	**4.3c**
For small steam or gas engines used on construction, per 8-hr.-day	**43.0c**

Paterson, N. J., gives its water department the option of providing service on construction jobs at metered or flat rates. The latter charges run as follows for the construction of:

A single-family home	**$6.00**
A two-family home	**8.50**
A larger residential building, per room	**2.50**
A building with stores, per store	**6.00**
Other large buildings, per day of construction	**3.00**
Use of steam engines, rollers, hoisting machines, steam shovels, etc., per day	**1.50**

Ithaca, N. Y., also gives its water department the option of providing service either on a metered or flat-rate basis. For the construction of residential or commercial buildings, the city makes a base charge of $5.00 per building, plus an additional set of charges as follows:

Brick, per thousand	**$0.15**
Hollow tile, per thousand	**.10**
Concrete, per cu. yd.	**.10**
Plastering, per 10 sq. yds.	**.50**
Building blocks, per thousand	**.10**
Stone veneer, per 100 sq. ft.	**.10**

Ithaca also will provide water to carnivals at the rate of $20 per day and to circuses at the rate of $30 per day.

Portland, Ore., does not bother with any metered rates when supplying water for construction purposes. Its flat rates run as follows:

Brick masonry, per 1,000 bricks	**$0.12**
To moisten lime, not used in masonry, per bbl.	**.12**
To moisten cement, per bbl.	**.04**
To settle earth in pipe trenches, per 100 cu. yds.	**1.62**
For power shovel, and other construction equipment, per day	**.36**
Concrete pavement, per bbl. of cement	**.04**

Portland makes a charge to circuses at the rate of $10 per day plus the cost of an attendant.

ANAHEIM, CALIF.

Rates Per Month

Cubic Feet		*Per 100 Cubic Feet In City*	*Outside*
First 750	(Min.)	$2.00	$4.00
Next 49,250	.....	.14	.28
" 50,000	.....	.12	.28
Excess	.....	.11½	.28

In annexable areas outside city limits, in-city rates are charged if residents of said areas pursue annexation procedures in good faith. The in-city rates are extended in such cases for six months.

Minimum Monthly Charges

Meter Size (in inches)	*Charge In City*	*Outside*
¾	$2.00	$4.00
1	3.00	6.00
1½	4.75	9.50
2	7.00	14.00
3	11.00	22.00
4	16.00	32.00
6	32.00	64.00
8	55.00	——
10	75.00	——

Fire Protection

For private fire lines used exclusively for fire protection whether connected with sprinkling systems or hose attachments:

Size Service (in inches)	*Monthly Charge*
2 or less	$2.00
3	3.00
4	4.00
6	6.00
8	8.00
10	10.00

(Continued on page 135)

When you invest—
Get the best—
Buy

WATCH DOG WATER METERS

GAMON METER DIVISION
NEWARK WORTHINGTON NEW JERSEY

Typical Monthly Costs

Gallons	Cubic Feet		Charge In City	Charge Outside
3,000	400	(Min.)	$2.00	$4.00
5,000	667	"	2.00	4.00
10,000	1,333		2.82	5.63

General Data

Population served 99,000
Miles of mains 320
Services (100% *metered*):
Domestic 20,000
Commercial 2,100
There are 6,000 unmetered services that belong to a private water utility in the city limits.
Supply—20 wells, Colorado River, or Metropolitan Water District
Treatment—River water treated
Plant capacity ..... 35 mgd
Average demand ..... 16½ mgd

Remarks

1. Utility provides service line from main to meter, which is installed in parkway.
2. On new main extensions that are eight inches or larger, the city bears the greater part of expenses. Otherwise subdivider pays cost and turns mains over to city.
3. The Anaheim Light, Water, and Power Company does not operate sewer services, but a charge of $1 per service is billed with utility bills.
4. Burroughs automatic equipment is used for billing.
5. Water rates were increased considerably on September 1, 1959. Further adjustment is not needed at present.

AUGUST F. LENAIN
Water Superintendent
Anaheim Light, Water & Power Co.
Anaheim, California

CORINTH, MISS.

Rates Per Month

Cubic Feet	Per 100 Cubic Feet
First 1,400	$0.375
Next 5,300	.30
" 6,000	.23
" 6,700	.15
" 6,700	.11
Excess	.09

Outside city limits, the rates are the same.

Minimum Monthly Charges

Meter Size (in inches)	Charge
⅝	$1.50*
¾	2.00
1	3.00
1½	5.00
2	7.50
3	15.00
4	35.00
6	100.00

* Outside city, $2.00.

Fire Protection

Fire hydrants, both public and private—$40 per year. No charge for sprinkler system or water tanks.

Typical Monthly Costs

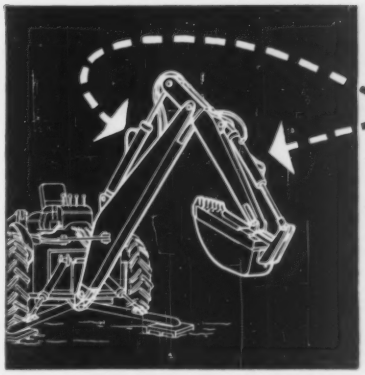
Gallons	Cubic Feet		Charge In City	Charge Outside
3,000	400	(Min.)	$1.50	$2.00
5,000	667		2.50	2.50
10,000	1,333		5.00	5.00

General Data

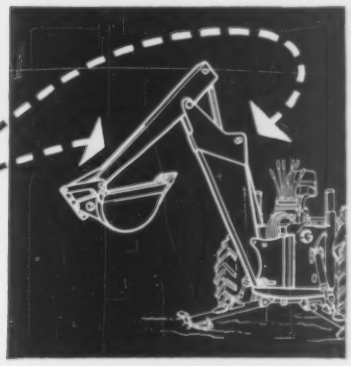
Population served 12,000
Miles of mains 50
Services (100% *metered*):
Domestic
Commercial
Other
Supply—Deep wells
Treatment—Chlorination only
Plant capacity ..... 3 mgd
Average demand ..... 1 mgd

Remarks

1. Utility provides service line to property only.
2. Utility provides the cost of new main extensions.
3. The Corinth Gas and Water Depart-



EXPOSED HYDRAULICS...



OR FULLY PROTECTED...

Which would you choose?

Only PARSONS-SHAWNEE gives you fully-protected hydraulics on both boom and dipper stick.

Cylinders, rams, and hoses are safely tucked away within box-weld frame . . . shielded from dirt, grime, and damaging blows on close-in work. It's another reason the 88-C keeps producing where other rigs fail . . . on spot excavations, digging under sidewalks, opening bell holes, etc. The 88-C produces up to 4 pay-cycles per minute . . . reaches 16'11", digs 12' deep, swings 188° uninterrupted . . . mounts on all popular-make wheel-tractors. For literature, or a call by your PARSONS-SHAWNEE dealer, send coupon below.

MAIL TO: PARSONS CO., SHAWNEE DEPT., *Newton, Iowa*

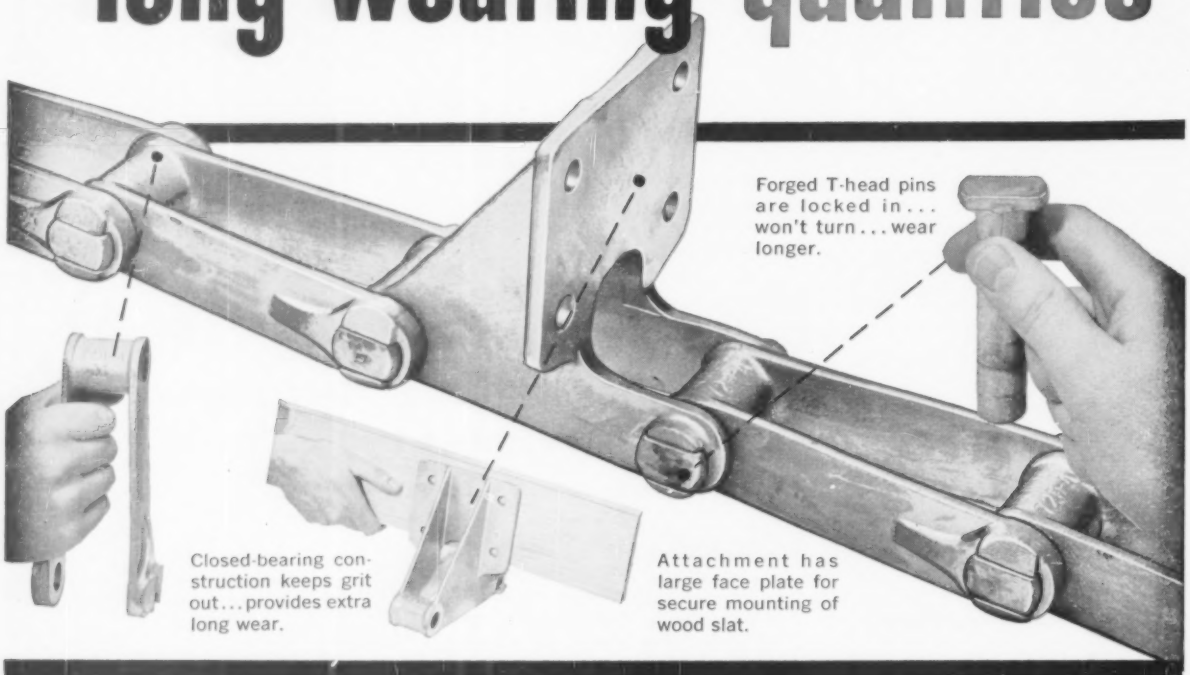
☐ *Send literature on the 88-C* ☐ *Have a salesman call*

Name .....
Dept. .....
Street .....
City, State .....

AMC 55

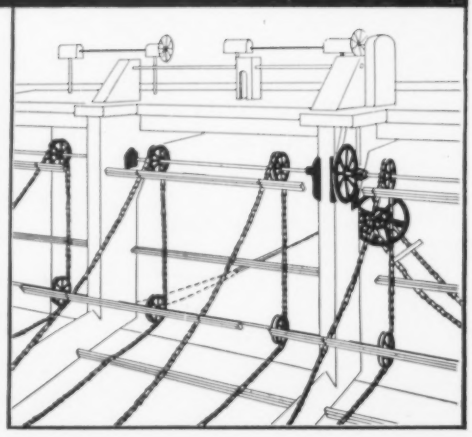
PARSONS COMPANY, *Shawnee Dept.*
(A Division of Koehring Co.)

Why Moline long pitch pintle chain has long wearing qualities


Forged T-head pins are locked in... won't turn... wear longer.
Closed-bearing construction keeps grit out... provides extra long wear.
Attachment has large face plate for secure mounting of wood slat.

For a serviceable, long wearing chain at a moderate price, sewage treatment plants prefer Moline Long Pitch Pintle Chain. It is designed and proportioned to provide great strength at minimum weight . . . is stronger than detachable chain and less subject to wear. Moline Pintle Chain is assembled with forged T-head pins with cotters. This construction prevents the pins from turning . . . prevents the entrance of grit . . . minimizes wear. Special analysis metal with superior corrosion resistance is available in this chain.

Write for information and prices or phone your local Moline representative.



LEADERS FOR 60 YEARS

Moline MALLEABLE Chains

MOLINE MALLEABLE IRON CO.

St. Charles, Illinois

Specializing in the Manufacture of Chains

ment has nothing to do with sewer services.

4. Burroughs equipment is used for automatic billing.

5. Water rates were increased by 30% in the high consumption bracket in 1955. Water use was not affected and further adjustment is not needed at present.

C. G. HOWELL
Manager
Corinth Gas and Water Department
Corinth, Mississippi

MANITOWOC, WIS.

Rates Per Month

Cubic Feet		*Per 100 Cubic Feet*
First 200	.....	Minimum
Next 800	.....	$0.14
" 14,000	.....	.10
Excess	.....	.05

Outside city, rates are 40% additional.

Minimum Monthly Charges

Meter Size (in inches)	*Charge*
⅝	$0.55
¾	.65
1	1.00
1½	2.00
2	3.00
3	5.00
4	8.00
6	16.00
8	30.00

Fire Protection

For public fire protection, the City of Manitowoc is charged $5,083. For all extensions of fire-protection service, there is added to this 1 cent per lineal foot put into use between hydrants placed, and $1.25 for each additional fire hydrant.

For private fire protection, the following charges are made for connections to the utility's water mains for automatic sprinkler systems, standpipes, water storage tanks, and private hydrant systems:

Connection Size (in inches)	*Charge*
Less than 4	$5.00
4	6.00
6	8.00
8	12.00
10	20.00

Typical Monthly Costs

Gallons	*Cubic Feet*	*Charge*
3,000	400	$0.83
5,000	667	1.20
10,000	1,333	2.00

General Data

Population served 30,000
Miles of mains 95
Services: Total of 8,176, 100% metered.
Supply—Wells
Treatment—Chlorine
Plant capacity ..... 15 mgd
Average demand ..... 4.8 mgd

Remarks

1. Utility provides no part of service line.

2. Utility provides the cost of new main extensions within city, but consumer must pay outside city limits.

3. Manitowoc Public Utilities has nothing to do with sewer services.

4. National Cash Register equipment is used for automatic billing.

5. Water rates were increased in 1957 by 18%. Water use was affected. Further adjustment is not needed at present.

R. E. CANNARD
General Manager and Chief Engineer
Manitowoc Public Utilities
Manitowoc, Wisconsin

MT. VERNON, N. Y.

Rates Per Quarter

Cubic Feet		*Per 100 Cubic Feet*
First 1,000	.....	(Minimum of) $2.00
Next 49,000	.....	.20
" 50,000	.....	.17
Excess	.....	.15

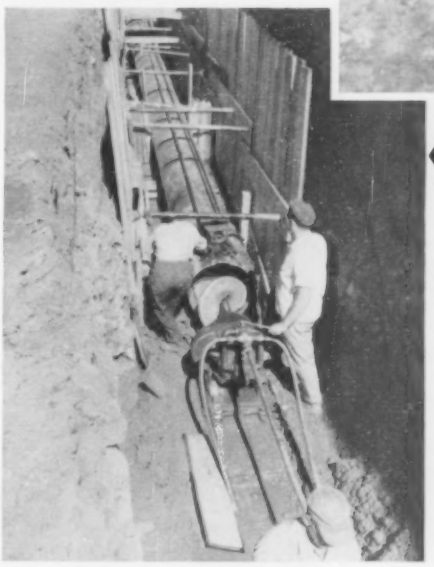
Mt. Vernon does not supply outside users at the present time.

(Continued on page 139)

Drilling with KA-MO . . .

6-in. bore under street —

Drilling 6-in. diameter hole, 40 ft. long under city street for gas line . . . this unit is powered by a 6 h.p. air motor using a standard double-track mounting. Ka-Mo drills are rugged, versatile . . . handle all materials from sand, clay, gumbo to frozen ground, shale, limerock . . . and other mineral formations.



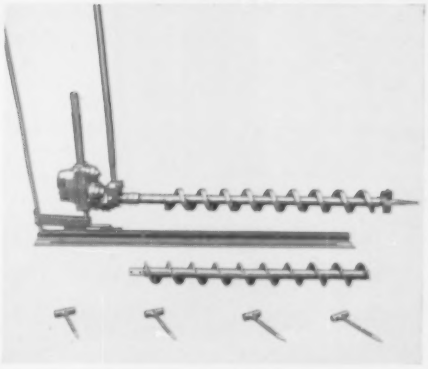
24-in bore inside casing

Powered by an 18 h.p. air motor . . . Ka-Mo horizontal drill quickly bored 24-in. diameter hole inside casing, 106 ft. long through compacted clay and ballast under a railroad bed for new gas distribution line. *Actual drilling time . . . only 4 hours!* Casing and drill move forward at same time, protecting against costly cave-ins.

Whether your work involves angular, vertical or horizontal drilling, it will pay you to check the big Ka-Mo line. Drill sizes: 2 to 48-in. diameter, and larger . . . sectionalized lengths . . . air, hydraulic, electric, gasoline or diesel powered.

Light, portable —

Here's a "close-up" of a 6-in. dia. horizontal drill with 6 h.p. vane type air motor and single-track mounting. It's light, portable, easy-operating. Speeds installation of distribution and service lines under walks, streets, railroad beds, etc. Other sizes in this series: 3 to 14-in. dia., in sectionalized lengths, with single or double-track mounting.



Special engineering service always available on difficult drilling or boring problems. Call any time!

Mail to: KWIK-MIX CO., Ka-Mo Tools Dept., PORT WASHINGTON, WIS.

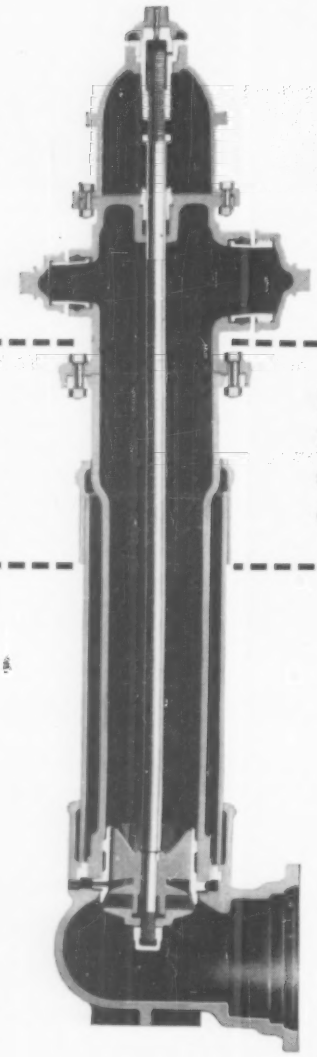
NAME .....
TITLE .....
COMPANY .....
STREET .....
CITY, STATE .....

Send free data on:
☐ horizontal ☐ vertical
☐ angular drilling equipment
☐ pipe anchor install. equip.
Dia. of hole ..... inches
Length of bore ..... feet
Type soil .....

AMC KAM905

KWIK-MIX COMPANY — Ka-Mo Tools Dept.
A DIVISION OF KOEHRING COMPANY

ONLY MATHEWS HAS ALL THE DESIRABLE FEATURES



What do you look for in a hydrant? Dependability... replaceable barrel?... conventional packing?..."O" ring seal?...stop nut to prevent stem from buckling? We could double this list and still not cover all the features we build into Mathews Hydrants *by design.* Mathews has them all.

DEPENDABILITY

Mathews Hydrants are always ready for service, because their design is fundamentally sound and simple. In 90 years we have never changed the basic design—only refined it, by detail.

AND ALL THESE OTHER FEATURES, TOO: All working parts contained in replaceable barrel • Head can be faced in any direction • Replaceable head • Any nozzles you specify • Nozzle levels raised or lowered without excavating • Leakproof because stuffing box is cast integral with nozzle section • Operating thread only part requiring lubrication • Protection case of "Sand-Spun" cast iron for strength, toughness, elasticity • With bell, mechanical joint or flange pipe connections

Conform to latest AWWA specifications

R. D. WOOD COMPANY

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers also of Mathews Flange Barrel Hydrants, R. D. Wood Hydrants, R. D. Wood Gate Valves, and "Sand-Spun" Pipe (centrifugally cast in sand molds)

Minimum Quarterly Charges

For all meter sizes $2.00

Fire Protection

Private fire hydrants .. $65.00 per annum
Private foamite connections ..... 65.00 per annum
Automatic sprinkler systems with no inside hose openings: 10 cents per sprinkler head per annum
Where there are inside hose openings in connection with the sprinkler system, Mt. Vernon requires the installation of a fire service meter, and the following minimum rates are charged:

Fire Service Meter Size (in inches)	*Annual Charge*
3	$40.00
4	80.00
6	160.00
8	240.00

Typical Quarterly Costs

Gallons	*Cubic Feet*	*Charge*
9,000	1,200	$2.40
15,000	2,000	4.00
30,000	4,000	8.00

General Data

Population served 80,000
Miles of mains 103
Services (100% metered):
Domestic 8,500
Commercial 800
Other 700
Supply—Hillview Reservoir (Delaware-Catskill Supply)
Treatment—Chlorination only
Plant capacity ..... 38 mgd
Average demand ..... 7½ mgd

Remarks

1. Utility provides no part of service lines.
2. Utility provides the cost of new main extensions.
3. The Mt. Vernon Board of Water Supply does not operate sewer services, nor does it bill for them.
4. In billing, Burroughs automatic equipment is used.
5. Water rates were increased in 1957 by 7%. Rates were previously decreased in 1945 and 1943. Mt. Vernon has had no rate increase since 1929. Water use was not affected by the 1947 decrease, and further adjustment is not needed.

ARTHUR G. JEWELL
Water Superintendent
Board of Water Supply
Mt. Vernon, New York

San Francisco Studies Finances of Transit System Development

Smith, Barney & Co., nationally-known investment banking and financial consulting firm, has been retained by the San Francisco Bay Area Rapid Transit District to study the financing required in developing a five-county rapid transit program. A $70,000 contract for the study was approved at the October meeting of the District's board of directors.

The contract calls for the firm to develop a plan for financing the five-county system in collaboration with engineering and economic consultants already retained by the District.

The financial consultant will study and program several methods of financing the planned five-county system prior to full development of the most optimum plan. The Boards of Supervisors of the District's member counties must approve the financing plan.

For any size trench from 6 inches to 6 feet wide — depths to 19 feet, there is a Parsons Trenchliner to fit your exact requirements. With 10 different models to choose from, Parsons line offers: ladder-type Trenchliners digging 6 to 72 inches wide at depths to 19 feet — and wheel-type Trenchliners digging 12 to 52 inches wide, at depths to 8½ feet. Shown above is a Parsons 130 Trenchliner. It's a handy wheel-type ditcher in the popular low-price range — small in size, big in capacity — digs up to 18 lineal feet of trench per minute, 12 to 24 inches wide at depths to 5¾ feet.

Low, compact, narrow— fits city clearances

Developed especially for city work, Parsons 155 Trenchliner gets around easily in congested areas. Low height of 7 feet-4 inches, and width of only 5 feet-4 inches over crawlers, permit digging under low-hanging trees, in narrow alleys, between houses, and in other tight quarters, normally inaccessible to trenchers of comparable size.

Digs 10 feet deep

Small in size but big in capacity, the 155 economically handles everything from mainline extensions to pipe reclamation and residential service connections. It opens trench 16 to 26 inches wide, at depths to 10 feet. Digging speeds range from 5.8 inches up to 25 lineal feet per minute. This lets the 155 "inch" its way past cross-pipes and other underground obstructions typical of city trenching, or "open up" for maximum feet per minute on clear right-of-way. Positive down-crowd boom starts cut fast, holds accurate grade, undercuts cross-pipes, sidewalks, gutters — makes vertical set-ins. Want more facts? Contact your local Parsons distributor, or write now for 155 Trenchliner catalog.

Mail to: PARSONS Company, Newton, Iowa *for literature on 155 Trenchliner*

NAME ..... TITLE .....
COMPANY ..... DIV. .....
STREET .....
CITY ..... STATE .....

☐ *Also send information on 130 Trenchliner* P810-AMC

PARSONS TRENCHLINERS
A DIVISION OF KOEHRING COMPANY

a name to remember...

HALLIBURTON

FOR WATER WELL SERVICE REQUIREMENTS!

Whatever the service requirements of your water well, you can depend on Halliburton for the services and tools that are engineered to increase the life and yield of your reservoir. Halliburton, world leader in well techniques and equipment, offers the following services:

CEMENTING . . . For maximum protection of natural permeability and porosity of the producing formation and casing; minimized migration of fluid.

FRACTURING AND ACIDIZING . . . Effective application of propping agents and chemicals for the stimulation of increased yield, by enlargement of flow channels or removal of restrictions.

HYDRO-SONIC REDEVELOPMENT . . . A proven technique that provides fast, efficient and economical treatment of water supply wells by means of controlled sonic shock waves and high frequency bubble agitation.

FORMATION TESTING . . . Tools and techniques specifically designed for more accurate reservoir evaluation . . . for evaluating potential.

SALES PRODUCTS AND MATERIALS . . . Halliburton offers a wide variety of field-tested, well-proven tools and materials developed to help make your water well a profitable producer.

Whatever the type of your water well . . . potable, irrigation or industrial supply . . . whatever the nature of your well's service requirements, you can rely on Halliburton for outstanding service There are 284 Service Camps ready to serve you.

For the Service Camp address nearest you, write or call . . .

HALLIBURTON OIL WELL CEMENTING COMPANY

DUNCAN, OKLAHOMA

The installation of recorders on all power sweepers more than doubled production. Here Chief Inspector Carbajal changes one of the charts.

The high road speeds of these two sweepers minimize travel time to outlying districts, thereby providing more time for actual sweeping.

Equipment matched to the job, good programming and close operating control add up to . . .

Cleaner Streets in El Paso, Texas

By **E. F. MUCKELROY**, Superintendent, Department of Sanitation

Each city has special problems in connection with its street cleaning activities. In El Paso great distance and mountain terrain—for the Mount Franklin chain of the Rocky Mountains divides the city into northern and eastern sections—and an inadequate storm sewer, which is fast being corrected, are major problems. With a total of 113 square miles within the city limits and 649 miles of paved streets, careful and methodical planning of a routing system takes on added importance. Another major factor is full use of all available equipment.

Our street cleaning equipment consists of four Elgins (single-gutter broom sweepers, tandem drive) and three Wayne double-gutter broom sweepers (also tandem drive), one four-wheel Mobil double-gutter broom sweeper and one new four-wheel Saginaw double-gutter broom sweeper, and two WD-45 Allis-Chalmers farm tractors equipped with small Henry front-end loaders. The buckets on these have been offset 18 inches to the right side so that they can work along the curb line. We also have one Model TL-12 Tractor Loader (Allis-Chalmers) and one Allis-Chalmers Model D grader with retractable blade, 22 hand carts with proper containers used by the "White Wings" and some 15 dump trucks. However, even with all of this equipment there cannot be any idle units if we want to get the job done. Consequently, we utilize various means to gain maximum efficiency.

We more than doubled production of the power sweeping machines by installing a Servis Recorder on each unit. This very fine and simple unit records the total hours worked and shows the stops made during the day's operation. Knowing the time reqired for various operations, the supervisor has no trouble in "reading" each stop and its meaning. Before installation of the Servis Recorders the sweeping machines were averaging about 16 miles per 8-hour shift. With the use of the recorder, each machine now averages close to 36 curb miles per shift. The charts

Front-end loaders play an important role in El Paso's street cleaning program, both in loading debris dumped by mechanical sweepers and in removing rock and mud left by storm waters.

It's a fact...

PACKER BODIES Cost 1/3 Less Than Rear Loading Units of the Same Rated Capacity, Yet Hold Yards More of Compacted Refuse!

How is this possible? The answer is *simplicity* of design and operation. First, the M-B Packer costs ⅓ less because there is no heavy, complicated hydraulic tailgate involved. A simple, powerful packer plate moves through the entire length of the body compacting all types of refuse — then quickly pushes out the load through the big rear doors. Secondly, the new vertical packer plate design allows up to *4 cu. yds. of useable area above the rated compacted capacity of the body!*

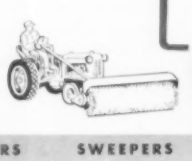
Because of M-B's square, van-type body design which eliminates dead weight, the compactor body can be mounted on a low-cost, popular size truck chassis with resultant savings in lower operating and maintenance costs.

There's a size for every need: 14 to 24 cu. yd. truck mounted; 32 and 38 cu. yd. in both the Trail-Pack, self-powered trailer type models and the M-B Contain-O-Pack Self-Loading Packer system for "containerized" refuse handling.
From every angle, you're dollars ahead with M-B Packer Bodies — the choice of hundreds of private haulers and municipalities.

Money-Making Features

- **FAST OPERATION:** rugged, bulldozer-type packer plate thoroughly compacts refuse, garbage and trash . . . the complete cycle takes only a few seconds.
- **COMPLETE SAFETY** because of side loading from the curb, eliminating danger to collectors from passing traffic. All compaction mechanism located inside the body — safely out of operator's reach.
- **PACKS ANYTHING** — barrels, crates, cartons, etc. without pre-crushing. Use as general purpose truck for hauling snow, ashes, park equipment, nursery stock, leaves, etc.
- **CONTROLLED DUMPING:** full load is pushed out quickly and safely by packer plate *without raising the body* as in hydraulic-type units.
- **LESS DEPRECIATION** — low truck cost, low body cost and less wear and tear adds up to less depreciation of your original investment.
- **MORE BLOCK COVERAGE** — progressive compaction, easy loading means more tonnage per load — fewer trips to the dump or incinerator.

The proof is in a demonstration. See your distributor or write the M-B Corporation, New Holstein, Wisconsin.



PACKER BODIES LINE MARKERS SWEEPERS

M-B CORPORATION
NEW HOLSTEIN, WIS.

Manufacturers of Quality Municipal and Construction Equipment Since 1907

become a permanent record of the operator's efficiency and also provide very fine equipment records.

Another help is the scheduling of equipment to various districts. Since all units are stored in one yard, considerable time in travel is involved in reaching outlying districts. In order to cut down travel time the Wayne and Elgin machines are used almost exclusively for cleaning streets in the central sections of the city, while the Mobil and Saginaw units, having truck transmissions, are used in making the long trips to our far-flung residential districts. Again the Wayne and Elgin machines dump their hopper loads on the streets for later removal while the four-wheel units haul the sweepings to the dumping sites.

Another item in residential districts is parked cars, a big headache in any community. El Paso has an ordinance prohibiting parking on streets designated for sweeping on a specific day. A crew, using a pick-up truck, places signs in the streets selected for cleaning the next day. These signs proclaim the day in which the street in question will be cleaned and require all cars to be removed by 8 a.m. of that day. Citations are issued to violators and if the citizen will accept the citation, no warrant is issued. Convictions carry a fine of not less than $2 nor more than $200, with the usual fine being $10. The ordinance requires that signs be in place at least 20 hours before actual sweeping.

Fortunately, we do get good cooperation from car owners and last year the department did not have to issue a single warrant to bring a violator into court. The commercial area still presents quite a problem and our "White Wings" face the daily chore of cleaning out litter from under cars.

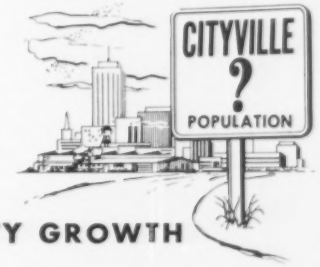
Heavy Debris

El Paso is located at the foot of Mount Franklin. A 5,500-foot peak separates one large residential district from another and the foothills extend to within a few blocks of the business district. The Upper Valley on the Rio Grande and the very heavily populated Lower Valley districts are divided by this rocky chain of mountains. During rainy periods, water from this huge shed of thousands of acres washes dirt and rock down the mountain arroyos on to city streets. Many of our paved thoroughfares become sluice-ways for fast-running flood waters that deposit dirt and rock in the many sections of the city. The city is now constructing a storm drain system that will be of tremendous value to the street cleaning crews. At such time as rains occur, usually in the early spring or in late August, our tractors, grader and front-end loaders carry the brunt of the load of removing the debris and getting streets open for use. The Tracto Loader is very valuable for scraping up the mud and rock deposited and the small Model D grader is a jewel. Since the TL-12 is used almost exclusively on pavement, this unit uses more cutting edges than any other front-end loader owned in the several departments of the city, usually requiring a new "blade" about every two weeks of operation.

Our Tracto Loader is often used for plain old "bull-dozing" in places provided for unloading of solids and non-combustible materials in the filling of holes and canyons on city property. We also use it to throw up temporary dikes to divert running water and to cut, gather and load tumbleweeds. During an ordi-

IT TAKES AN

O'Brien Sewerking®

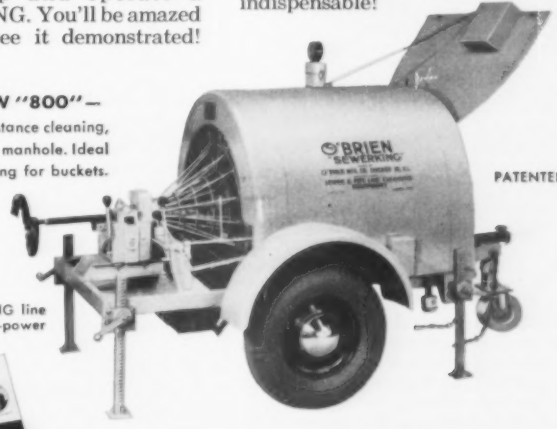


TO KEEP PACE WITH CITY GROWTH

• More homes, more industry, more schools and institutions . . . no wonder the growing town has a sewer cleaning headache! The remedy is a high performance O'BRIEN SEWERKING — the all-power, automatic sewer cleaner that will fit your needs of today *and tomorrow!* One man can set up and operate a SEWERKING. You'll be amazed when you see it demonstrated!

It's the revolutionary improved way to clean sewers that will enable you to run a proper maintenance program, take care of any emergency promptly, and reduce costs 50%—75%! Let us refer you to cities and towns, coast to coast, for whom an O'BRIEN SEWERKING has proved to be indispensable!

THE NEW "800"— for long distance cleaning, manhole to manhole. Ideal for threading for buckets.



PATENTED

• See the SEWERKING line of automatic, all-power sewer cleaners.

FREE CATALOG! MAIL COUPON

O'BRIEN MANUFACTURING CORPORATION
5632 Northwest Highway • Chicago 46, Ill. DATE_____

OK—O'BRIEN . . . send us the facts and the SEWERKING CATALOG.

CITY_____ STATE_____

STREET_____

SIGNED BY_____

TITLE_____ DEPT._____

AC160

O'Brien MANUFACTURING CORP.
5632 Northwest Highway
Chicago 46, Illinois
Phone ROdney 3-7433

(Advertisement)

1959 has been a paradoxical year. With the public press reporting good business for the country as a whole, it has taken a discerning student to discover that the part of the economy relating to capital goods has only bettered to a modest degree. This fact, plus the low carryover of orders from 1958, caused us to have an unhappy year financially.

However, with the modest but positive increase in business in the U.S.A. and the substantial increase in orders for most of our overseas areas, we look forward with confidence to 1960. Improvement of efficiencies in all internal departments has also been positive and is continuing both as to costs and the time it takes to do things. This naturally will be beneficial to our customers.

SANITATION — Once again this segment of our operations has played a dominant role in our worldwide business during the past year. Orders were placed with us and our subsidiaries to serve larger centers of population such as Trenton, New Jersey; New York City; Bagdad, Iraq; Chicago, Illinois; and Elizabethville in the Belgian Congo, as well as for smaller municipalities from Pierrefond, Ontario to Albertville, Alabama and from the Villa Carmen housing development in Puerto Rico to Harlingen, Texas. Two large U.S. corporations also will install D-O equipment in treatment plants constructed for a research laboratory in New York State and a West Virginia townsite.

Further proof of widespread acceptance of our newer developments is installation of a SpiroVortex system at Checotah, Oklahoma and of CompleTreator units at industrial plants, recreation centers, housing developments and military sites in the United States. Abroad, our Dutch subsidiary will install one of these units in a concrete rather than steel tank, and the first CompleTreator unit has been purchased in the Philippines. The latter, for a large refinery, represents the first export order for our manufacturing representative in Malaya.

New applications of proven equipment include use of the ODS pump for handling conditioning lime for sewage sludge filtration, and fabrication of a plastic sludge filter. Also, development work continues on additional applications of our industrial equipment in the sanitary field.

SUGAR — Orders from new and expanding cane sugar factories in India for RapiDorr Clarifiers and Oliver-Campbell Filters contributed significantly to the business of our subsidiary in that country. And in other locations around the world—Mexico, British Honduras, Egypt, Mozambique and Swaziland, for example — these two units continued to be accepted as standard in the industry. In beet sugar, a British producer purchased First Carbonation Thickeners and Vacuum Filters for two new mills; and two Italian mills will use a total of four Vacuum Filters.

PETROLEUM—A variation of the initial application of the DorrClone Desanding System in fresh water treatment is the desanding of salt water used to recharge wells for secondary oil recovery at a West Coast location. Outside the U.S. our Japanese representative is fabricating filters for use in a catalytic cracking process and our British company will supply oil-water separators for both British and Brazilian refineries. Also of interest is equipment for a pilot plant to recover oil from tar sands.

WATER — Conventional pre-treatment equipment will be utilized at D-O supplied water plants for a new steel mill in India, a military camp in Iraq and the municipalities of Wilmington, Delaware; New Castle, Pennsylvania; Saida in Lebanon; and Maracaibo and Naiquata, Venezuela. Next year new PeriFilter systems will go into operation at New Oxford and South Pittsburgh, Pennsylvania and in 1959 a large system with two Hydro-Treator mechanisms went on line treating Midland, Michigan's water supply.

METALLURGICAL—As in past years our work in this area has involved virtually all of the metallic minerals from gold to iron ore. The latter field has been among the most active with purchase of Sizers and Filters for Canadian washing plants, DorrClone classifiers for desliming prior to flotation and Thickeners, Filters and Pumps for recovery of blast furnace flue dust.

PULP AND PAPER—A new tool for this industry is a novel pressure washing filter. Installation of the first U.S. manufactured unit is being made in a Southeastern pulp mill. Ideally suited to brownstock washing, the unit has a number of advantages from both the operating and installation standpoints.

Recausticizing systems including process flowsheet innovations, such as precoat operation of the Lime Mud Filter and application of a two-compartment White Liquor Clarifier with special feedwell, were purchased for new or expanding mills in Canada, India, the United States, Portugal, Japan, Yugoslavia, Scandinavia and the Philippines.

Around the world the American Saveall continued to be recognized as the major means of recovering paper machine fibers from white water and in the U.S. the largest bleach tower designed to date will soon go into operation. An unusual and interesting application of the Merco Centrifuge is recovery of by-product material used as a drill mud dispersant at a West Coast mill.

CHEMICAL — During the year applications of the Plastic Filter, first introduced in mid-'58, were broadened to include a variety of fine chemical and pharmaceutical separations and washing of acid leach liquors from metallurgical pulps. Also in the realm of new applications is dewatering of various plastics using the Mercone Screening Centrifuge.

As usual, our standard line of equipment played a major role in a great number of Italian chemical plant expansions and in large new or expanded facilities in France, Germany, Spain, Mexico and here at home.

We have noticed with much concern the apparent growing tendency of many users of services and equipment to buy almost exclusively on price rather than on demonstrated product quality and the essential engineering services made available to them during planning and after installation. This is not a new subject — and one on which there has been much forceful editorial comment in the technical press.

This practice confronts the supplier with the practical short range choice of sacrificing product quality and needed engineering, losing the business, or taking it at a loss. For our own part, we do not propose to fall into this trap which, economic considerations aside, can only result in arresting technological advance and which could have a profound effect on the leadership of the free world in things technical.

J. D. Hitch, Jr.
Chairman of the Board

December 1, 1959

nary day's work of street cleaning of blow sand and rock, it moves very close to 80 cubic yards of such debris, averaging between 16 and 20 curb miles.

The business district drainage system is totally unable to carry off the water from a flusher. Again, plans are under way to correct this problem but for the present we have to sweep the streets more often than would normally be required. One machine sweeps the business district each night of the week. Main thoroughfares are swept three times a week and secondary streets once a week. Much of this work is done during the day hours and some in the early morning hours with all manual labor reporting at 5 a.m. and power machine operators reporting at 6:30 a.m. The men work on holidays only when there is to be a special event, such as a parade.

The department employs ten inspectors to supervise and make inspections in both sanitation and street cleaning. Using two-way Motorola radios they report places in need of attention to Rudy Carbajal, inspector in charge of street cleaning. Power machine operators are allowed time for greasing and installing of new gutter brooms and main fiber brooms on their machines in the afternoon, so that they will be ready for the next day's operation.

During the fiscal year of 1958-59 our street sanitation crews cleaned 96,286 curb miles, removing 96,684 cubic yards of refuse from the city streets. The three tractors accounted for around 27,000 cubic yards of this material. Our street cleaning cost very close to $328,000 or around $1.15 per capita.

Water Customer Records at Park Forest, Ill.

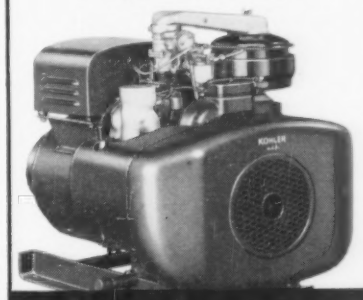
A vertical revolving file in our Water Department lists by address and also by name all of our customers. It gives their account numbers, move-in dates and meter numbers. It is referred to by other departments, such as the police, to locate persons not shown on such other records as telephone books.

We are very well satisfied with the system and would be lost without it. The equipment was supplied by Acme Visible Records, Inc., Crozet, Va.

R. Enzweiler
Superintendent
Water Department
Park Forest, Ill.

Reliable emergency power for new OCDM requirements . . .

KOHLER ELECTRIC PLANTS



Kohler electric plants enable you to meet — reliably, economically — the OCDM directive requiring installation of automatic emergency generators before radio equipment for civil defense can be bought with matching Federal funds.

Kohler stand-by plants with automatic transfer switch are fully packaged for immediate, unattended take-over of emergency loads. Sizes to 100 KW, gasoline and diesel. Write for folder H-42.

KOHLER CO. *Established 1873* KOHLER, WIS.

MODEL 5RM21, *5 KW, 115 volt AC. Air-cooled, gasoline. Remote start.*

KOHLER OF KOHLER

Enameled Iron and Vitreous China Plumbing Fixtures • Brass Fittings
Electric Plants • Air-cooled Engines • Precision Controls

For LOW COST Outdoor Lighting!
The Original HOPE

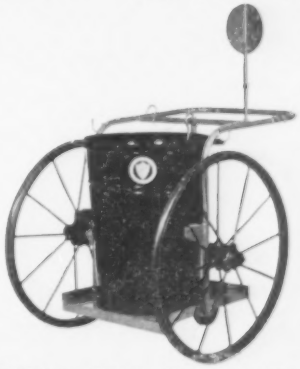
MALLEABLE IRON METAL-PIPE POLE BASES

A Rugged Support for Threaded Pipe Uprights with Chamber for Splicing and Grounding

Turn galvanized pipe into threaded hub of base. Top off with fixture. Install over embedded anchor bolts and conduit stubs. Splice and ground through hand-hole. Four sizes: 2"; 2½"; 3"; 4". Plain or 3-pole receptacle cover. Bulletin #25.

HOPE ELECTRICAL PRODUCTS CO.
53 Long Ave., Hillside, N. J., ELizabeth 4-7837

Street Sweepers'
CAN CARRIERS



TARCO "Street Sweepers' Friend" Can Carriers are the **toughest, best balanced, easiest pushing** carts you can buy.

All welded steel construction . . . no bolts, no rivets, no dangling chains. Choice of big, easy-to-push wheels with either **pneumatic, solid rubber** or **plain steel tiring on roller bearings.** Full swiveling caster wheel. Silent can-clamp. Tool hooks. Traffic warning flag.

Make it easy on yourself all way round . . . buy longer lasting can carriers that look good; that will be less tiring for your men to push and use. Buy TARCO "Street Sweepers' Friend" Can Carriers. See your nearest TARCO dealer or write for details.

TARRANT MFG. CO.
23 Jumel Place, Saratoga Springs, N.Y.

Columbia Calcium Chloride–rock salt mixtures keep roads open . . . costs and accidents down

Will you be getting a call from this disgusted driver? Keep complaints down, roads open and safe this winter with economical Columbia Calcium Chloride–rock salt mixtures.

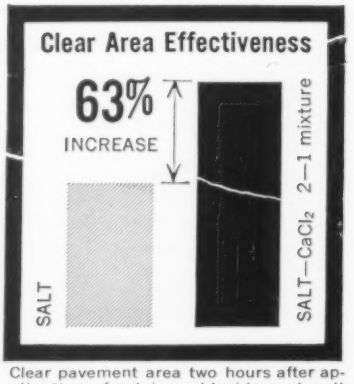
BARE PAVEMENT FASTER: Test results (right) clearly prove the ice-melting effectiveness of Columbia Calcium Chloride–rock salt mixtures.

ALL-TEMPERATURE EFFECTIVENESS: Columbia Calcium Chloride–rock salt mixtures assure quick melt at *all* temperatures—from freezing to sub-zero.

SAVE TIME, MONEY: Columbia Calcium Chloride and rock salt mix easily, can be stored indefinitely, ready for instant use. Bulk purchase and storage help stretch maintenance budgets.

You can't compromise with ice and snow. Keep your roads safe this winter with Columbia Calcium Chloride–rock salt mixtures. For more information write to our nearest District Sales Office or to our Pittsburgh address.

You'll like doing business with Columbia-Southern.



Clear pavement area two hours after application of calcium chloride–rock salt mixtures is 63% greater than salt alone in 25-30° temperature range.

(Based on field studies in Michigan sponsored by the Calcium Chloride Institute)

COLUMBIA-SOUTHERN CHEMICAL CORPORATION

A Subsidiary of Pittsburgh Plate Glass Company • One Gateway Center, Pittsburgh 22, Pennsylvania

DISTRICT OFFICES: Cincinnati • Charlotte • Chicago • Boston • Cleveland • New York • St. Louis • Minneapolis • New Orleans • Dallas • Houston Pittsburgh • Philadelphia • San Francisco IN CANADA: Standard Chemical Limited

More Power to the Cities

By W. W. SPROUL*

The commercial market for electric energy includes parking lots, broad, traffic-speeding throughways, and glittering Main Streets of stores, buildings and filling stations.

In the next ten years $600 billion will be spent in new construction of all types and this figure doesn't include the $250 billion of the same type of commodities and services that will go into maintenance and modernization construction. When you consider that the value of all the buildings standing in the United States today is only about $500 billion, this means that we, as a nation, will double our real estate investment in one decade.

In terms of the "electrical part" of this $600 billion, best estimates place the electrical requirements at $66 billion for new construction and another $54 billion in maintenance and modernization construction, or a total of $120 billion. But beautiful, practical "cities of tomorrow" and the commercial facilities that are required in the nation's suburbs, will not just happen! Without guidance and leadership, our coming $850 billion worth of spending for construction could build us into problems even worse than the ones we have today.

Now, by and large, merchants recognize the need to pump new life into the hearts of our communities. They talk constantly of solutions for traffic congestion, for brightening the streets and for remodeling their store fronts. Yet, seldom are these men in position to provide the one thing they all need most—leadership.

The changes already taking place in our American work ways and play habits, and in the way we spend our income, will bring a look of things undreamed of. That's why we (Westinghouse and our customers) must *think*, and plan in terms of what we *now* see ahead, and not in terms of what we remember of the past.

Right now we are seeing dramatic developments in the construction industry that more than bear out these ten-year forecasts.

There are 648 urban renewal projects "on the boards" at this very moment, and each dollar spent here starts a chain reaction generating more construction capital.

All across the U. S., from New York to Los Angeles, you see slums being flattened to rubble; you see the rubble being cleared away, and replaced by new office buildings, public centers, schools and hospitals.

Typical of this urban renewal is the fine progress that is being made in Philadelphia. I'm sure that most of you were familiar with the old "Chinese wall" of railroad track which used to split the center of the city and which, in recent years, spread blight right down to the doors of the City Hall.

But today, this blight has been replaced by tall, modern office buildings. This remarkable renovation has attracted new business to the area, improved property values, and has brought in additional tax revenues.

And if you'll permit me, I'll refer to our Pittsburgh urban renewal which is typical of many others. In the late '40's, the "Point" was an unsightly tangle of dilapidated structures. Over 40 old buildings were razed and replaced by six large office buildings, one hotel and a park. Here again, as in Philadelphia, new business has been attracted. But of particular significance is the fact that property assessment has *doubled* in just nine years, from $6 per square foot, to $12 per square foot in 1959.

* This article is taken from a report by W. W. Sproul, Vice President and General Manager, General Products Division, Westinghouse Electric Corp., to the Westinghouse Fourth Future Power Market Forum.

Building Costs Rise 2% in Six-Month Period

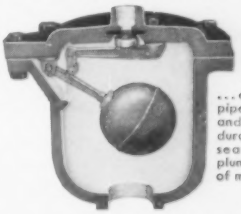
Construction costs in the United States (excluding Alaska and Hawaii) rose 2% between March and September of this year according to Myron L. Matthews, manager-editor of the Dow Building Cost Calculator, an F. W. Dodge Corporation service.

This 2% increase is an average figure based on building materials, prices and hourly wage data received from 144 metropolitan areas throughout the country, together with other elements of cost such as design, taxes, insurance, money and competitive conditions.

Crispin

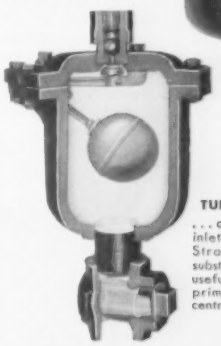
AIR VALVES
are thoroughly dependable

For positive air control use Crispin Air Valves. Simplified construction, easy accessibility, maximum dependability, minimum maintenance, and efficient operation are advantages built in every Crispin Air Valve.



Crispin
MODEL "P" AIR VALVES
... eliminate air in pipelines, pumps, tanks and other vessels—durable stainless steel seat and synthetic plunger resist attack of many liquids.

Crispin
DUAL VALVES
... safely release air during line filling and while it is in operation, permit air to enter as line is emptied—low-cost 3-way control.



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TURBINE VALVES
... control air from inlet through outlet. Strains out foreign substances. Particularly useful with automatic priming systems of centrifugal pumps.

Write, wire or phone for complete information on dependable Crispin Air Valves that keep your pipelines open for safe, economical operation.

FOR AIR CONTROL VALVES OVER 45 YEARS

multiplex
MANUFACTURING COMPANY
BERWICK, PENNSYLVANIA
Dept. E

DRAMATICALLY CLEAN sweeping with Tennant "100" reduces complaints, attracts public interest.

SWEPT AS CLEAN AS YOUR OFFICE FLOOR. Tennant's huge 540-square-foot filter captures virtually *all* the dirt . . . even particles as fine as 5 microns, far smaller than the human eye can see. The Tennant "100" sets a new cleaning standard.

YEAR AROUND SWEEPING. Tennant *Vacuumized* system gives almost perfect dust control without need for water spray . . . thus no winter freeze-up problem. Your town can enjoy extra clean sweeping even when temperatures are below-zero!

How to give your city an EXTRA-CLEAN name

From Maine to California, progressive cities take pride in the *cleanliness* of their downtown areas—as these are their public "showcases".

It is here—where extra-clean sweeping counts most—that you will find enthusiastic interest in TENNANT'S revolutionary *vacuumized sweeping.*

You'll see the difference at once, because a TENNANT Model "100" Vacuumized Sweeper provides *ultra-clean sweeping . . . with no dust nuisance at all!* For performance, the new "100" is in a class by itself.

Its powerful brush-and-vacuum system picks up the fine dust that's usually missed . . . as well as heavy, bulky debris. It cleans a 7′4″ path.

You'll find it trimly compact, highly maneuverable. Assures outstanding results in downtown areas, dusty alleys, parking lots . . . as well as in attractive residential areas.

WRITE TODAY *for illustrated bulletins, photos and performance data. G. H. Tennant Co., 751A N. Lilac Drive, Minneapolis 22, Minnesota.*

TENNANT

VACUUMIZED SWEEPERS

Power Sweepers

Traffic Line Erasers

Concrete Routers

SPECIALIZED MAINTENANCE EQUIPMENT

The City Tells Its Story

Edited by PAN DODD EIMON
Consultant, Municipal Public Relations

Municipal Public Relations

Cookingham Demonstrates MPR in Fort Worth

A king-sized public information program is developing in Fort Worth, Texas (population 400,000) since L. P. Cookingham came to town in mid-year of 1959.

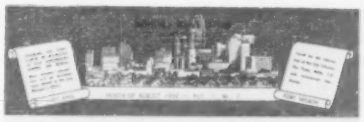
Working with the full cooperation and backing of service-minded Mayor Thomas A. McCann ("He's essential to our public relations program"), City Manager Cookingham has undertaken these information projects:

- **establishment of a *monthly newsletter* for council and citizens**
- **creation of a popular-style *tax leaflet* to accompany the yearly tax bills**
- ***revision of the budget document* to include easy-to-read explanatory and statistical data—in lieu of masses of figures**
- ***a monthly financial summary*, (manager to council) made available to libraries and citizens on request.**
- ***"Face-to-Face" program* ("I'm accepting all speaking engagements tendered . . . making from three to four talks weekly before civic clubs, professional organizations, and other groups.")**
- ***an annual report*, now in the planning stage (such a report has not been issued in prior years)**

What do Fort Worth people think of the information effort? Here are comments and quotes from letters received by the city manager.

Says a businessman, "Keep the public informed and you will get support. Have heard many compliments." A community leader approves the information program as a "mighty good way to win friends and influence people." He says it will "enable people, obviously civic minded, to keep better informed."

A housekeeper thinks the newsletter is ". . . one of the nicest and most thoughtful things to come our way. Thank you." And a city board member wrote that he is "interested in the activities of each department. I think the newsletter



Fort Worth's informative newsletter is multilithed monthly for the council and for the press and citizens on request.

is a splendid way in which to keep informed. Thanks for the service."

One citizen telephoned the city manager to volunteer support. "Please call on me if I can help in any way to aid you in making Fort Worth a better city."

The monthly newsletter was a first step. It is multilithed in color, on white 8½" by 11" sheets. A standard masthead of the Fort Worth skyline is used on page one. Several sheets are stapled together.

The newsletter covers city operations accomplished or in process during a month. Sample heads in one issue (August 1959) indicate the range of subjects:

"Investment of idle funds produces substantial income.

"Continuation of Dental Clinic planned.

"City construction at high level.

"Twenty per cent better mileage with six-cylinder police cars.

"New water pumping facilities now in service.

"Expanded long-range water supply vital to future of Fort Worth.

"New phase begun in Fort Worth's aviation development.

"Nation-wide polio epidemic has missed Fort Worth.

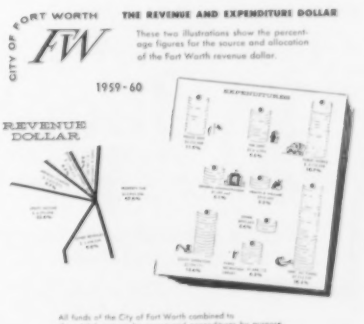
"Library usage shows steady increase."

The newsletter also carries a listing of "projects or inquiries" assigned by the council to the manager's office—with a short paragraph or sentence on how each matter has been handled.

This newsletter goes now to city councilmen, departmental officials, newspapers, radio and television news departments, and is mailed to any city resident on request.

The Fort Worth tax leaflet, 10½" by 6½", folds twice to 3½" by 6½", is printed in black with color, and contains line drawings to show "where the money goes." Headlined "Your property taxes are your investment in good government," the title side tells what services city taxes support.

It makes quite clear the points that: almost half the city taxes go to schools; the property taxes provide less than half of the money necessary to operate the city; and no tax money is used by the water, sewer, and airport operations.



Taxpayers in Fort Worth can see what happens to their money in this leaflet prepared by the city manager's office. It's part of a new (1959) effort to keep the citizens informed.

NEW from JACOBSEN...

Synchronized Mowing...

THE TURF-KING 76 76-inch cutting width

Three fully articulated, power driven reels that operate ahead of all wheels—follow ground contours smoothly—mow side-hill slopes and up or down grades.

Only the Jacobsen Turf-King 76 has these exclusive features:

- Exact adjustment to keep all three reels at the same cutting height; eliminates streaking.
- Simple hand adjustment for bed knife. No tools needed.
- Variable forward speeds from ½ to 4¼ mph (with constant reel speed).
- Wing units capable of cutting 25 degrees up or down.

Easy riding, perfect balance. A highly maneuverable, rugged, large capacity mower.

The most complete line of mowers in the industry, from 18 inches to 21 feet

Call your Jacobsen dealer or send coupon for brochure

JACOBSEN POWER LAWN TOOLS

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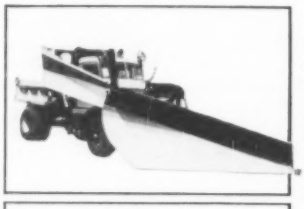
Think of

FRINK

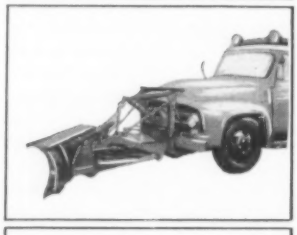
—The Plow Designed to Meet YOUR Snow Removal Needs

Whether snow removal problems in your area require a high-speed, heavy-duty V-type plow (**above**) or a lighter, maneuverable Reversible type, Frink has the plow specifically designed to do the job . . . faster, safer, at lower cost.

Frink, the pioneer in advanced snow-plow design, makes four basic types of plow, each with models to fit 1½ to 12 ton trucks . . . and most are interchangeable on same truck attachment. Get full details from your Frink distributor or write Frink for descriptive folders about any of these plows —

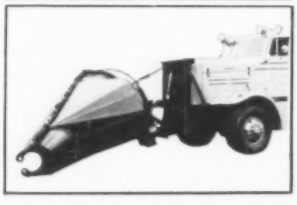


ONE-WAY Snow-Plow with Trip Blade
Finest speed plow made . . . tapered, curved moldboard throws and spreads snow to minimize deep banks, yet windrows neatly at city speed.



REVERSIBLE PLOW with Trip Blade
The all-purpose plow . . . throws right or left, or bulldozes straight ahead . . . cab lever sets position automatically, even while plowing.

ROLL OVER Plow with Taper Blade
Made **only** by Frink . . . can rotate to left or right position in 15 seconds . . . high-speed for deep snow . . . ideal for airports and dual highways . . . ends deadheading . . . easier to park.



V-TYPE Sno-Plow (shown at top)
Rugged powerhouse for heavy-duty plowing . . . self-ballasting to keep nose down, prevent side thrust . . . bevels side banks . . . will not wedge . . . safe at high speed . . . economical in use.

For Snow Plow Know-How It Pays to Think of FRINK SNO-PLOWS

FRINK SNO-PLOWS, INC., CLAYTON, N. Y.
Eastern Steel Products, Ltd., Preston, Ontario-Canada

To avoid costly and physically dangerous trouble like this from forest giants that have no place in modern residential areas . . .

. . . Parma now plants small trees like this Snow Flowered Globe Mazzard Cherry which matures at a height of 16 feet.

More Small Flowering Trees Wanted

A suburban community competes for a beauty title by developing a tree-planting program in harmony with today's requirements

By **LESLIE MORGAN**
Street Tree Commissioner
Parma, Ohio

No Greater Cleveland suburb has tried to challenge the parent city for its nickname "The Forest City." As a matter of fact, the suburbs are working in the opposite direction—competing for the title of "Garden Street City."

The public wants, and is getting, smaller trees to complement their modern houses, and trees with some outstanding characteristic to give their street personality.

To become an eligible starter in the race for beauty a municipality needs a master street-tree plan. Parma was one of the first to have one in the Cleveland area, in 1956, but there are 36 Greater Cleveland suburbs who now have the plan—and more are being added yearly.

Unfortunately, many consider street trees as a secondary activity. In reality, they are the only municipal property that increases in value as the years go by.

Tree maintenance programs have been denting municipal budgets for many years. In the United States last year, cities and homeowners spent some $40,000,000 to rectify tree mistakes — and public utilities spent even more for trimming or removing trees that were interfering with overhead lines or luminaires. With the increase in home building, and consequently plantings, it could be assumed that spending for tree maintenance will be increased unless cities adopt a plan to prevent poor street-tree selections.

In 1954 the Cleveland Electric Illuminating Company retained Edward H. Scanlon and Associates, consulting arborists, who devised the master street-tree plan to help alleviate the company's tree problems and benefit municipalities and home-owners as well. The program is a public service project and has been highly commended. Only a year after its inception, the American Public Relations Association of Washington, D. C. presented the 1955 Silver Anvil award to the Cleveland utility for its long-range community tree program, calling it a meritorious public relations performance in the public utilities field.

After Mr. Scanlon received permission to begin in Parma, he and his assistants surveyed every street in the community and recorded 17 items: street name, block number, direction, width of paving, sidewalk, tree lawn, lot, building setback, building height, truck or bus route, character of street (residential, industrial, etc.), overhead lines (side of street, size of pole, etc.), street lighting (side of street, lamp height, etc.), ground factors (drainage, soil, etc.), remarks about existing trees and conditions, and recommended treatment.

Tree Selection

From these facts he selected a tree for each street—a variety which will not conflict with any of the site factors when it reaches maturity and which will enhance the property. The scientific and common name of the official tree was also recorded on the plan as well as spacing and recommended planting size.

Upon completion the plan was

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if *you* voted on Automatic Voting Machines in the recent election. You *know* how they have assured efficient elections at reduced cost.

But . . . if you were one of the relatively few using old style paper ballots . . . weren't you thinking that *your* Community should also have the many advantages . . . monetary and otherwise . . . of voting with Automatic Machines? Your community *can* . . . and *should* . . . have these benefits . . . *now!*

Available for Service Clubs or other interested gatherings by 60 day reservation—a new 18 minute 16 mm color film illustrating potential benefits of Automatic Voting Machines.

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division of Rockwell Manufacturing Company
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a **NEW** solid-color PVC
POLY-CONE*

tough, durable, no seams, will not CRACK, TEAR or BREAK!

This new SAFE-T-CONE never needs repainting. Just wash it with soap or solvents. Made of polyvinyl-chloride to produce the toughest, *most durable cone on the market.* Outlasts ordinary cone many times . . . . without upkeep!

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TRAFFIC GUIDES

All-Rubber SAFE-T-CONES available in 3 SIZES!

Painted or Reflectorized ALL RUBBER
Regular all-rubber SAFE-T-CONES, now better than ever. Painted standard red and yellow or reflectorized.

Plastic or All-Rubber FLUORESCENT
New Poly-Cones and All-Rubber cones available in brilliant orange-red fluorescent for extra brilliance, day or night.

SAFE-T-CONES made only by **Radiator Specialty Co.**
Charlotte, N. C.

FILTER SAND AND GRAVEL

Produced from an inland pit hence free from river contamination and foreign matter.

Shipment in bulk or bagged.

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NORTHERN GRAVEL COMPANY
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P.O. Box 307 Amherst 3-2711

formally presented to municipal officers at a public meeting along with a recommendation that an ordinance be passed to make the plan official. Of the 36 communities in the Greater Cleveland area which have master street-tree plans, 22 have adopted an ordinance which makes it mandatory for anyone wishing to plant a tree in the tree lawn to get a permit (free) from the city hall and plant the tree designated.

Naturally everyone will not be pleased with the tree selection. There will be some who want a different tree; however, the plan does not offer a choice and the tree lawn is, after all, public property. If the wrong tree is planted (and we check streets periodically) we send a notice to the home-owner to replant the tree on his property; it must be done within a week.

Parma can't afford to be without a master street-tree plan. Our city has grown from 18,000 population in 1938 to 70,000 in 1957. With all the problems an expanding community is involved in, it would be easy to ignore street trees until they became a problem; but our city officials realize that it would be more economical to plant the right trees now than to remove the wrong trees five or ten years from now.

Shortly after Parma received its plan the public approved a $150,000 bond issue for the tree program. Since 1957 we have planted over 2,000 trees, removed about 1,000 trees, and have about $48,000 left.

The trees selected for Parma will mature at a height between 16 and 35 feet. They have either outstanding form, colored bark, colored leaves, or flowers—and very often a combination of these qualities.

Forms may be globular, oval, pyramidal, columnar, pendulous or conventional. Flowers may be red, pink, white or yellow. Bark may be orange, lemon, mahogany, brown, white, red, or green-and-white striped. Leaves may be yellow, green, red, gray, orange, plum, or red and yellow.

In years to come, people from the Cleveland area won't have to go to Washington, D. C. to see flowering cherries in the spring, because the Washington species of cherry tree has been planted in Parma as well as other nearby suburbs. Parma and Brooklyn (our neighbor) have 850 of these trees on the main street which goes through both towns. Cuyahoga Heights has 400—Lyndhurst has 250 on a prominent street—and Mayfield Heights and South Euclid have designated this tree for their main thoroughfare. The latter three towns are adjoining and the cherry trees, when planting is completed, will extend about four miles.

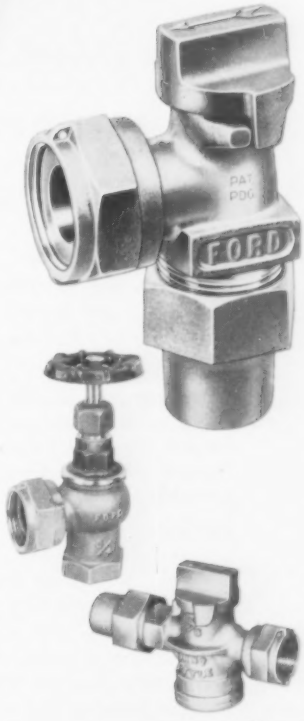
You'd be surprised at the way people notice flowering trees. Not a day goes by in the spring that we don't receive a dozen calls or more from curious individuals who want to know the name of one tree or another they saw blooming.

Just a reminder here, while writing about the Japanese cherry varieties (Kwanzan, Akebobo, Tai Haku, Shogetsu, etc.). They should be grafted on 6-6½-foot understock because these plants have a tendency to bush out if budded or grafted low. It is both costly and time consuming to grow straight stems and keep suckers from forming. However, if these trees are grafted in this way they will have straight stems and provide the important clearance for vehicular and pedestrian traffic.

Parma is growing and if it is planted attractively surely its beauty will encourage even more growth.

save
fittings, pipe joints and space

FORD RINGSTYLE* VALVES



Ford Ringstyle construction is a feature developed by Ford to attach the meter coupling nut to the service valve. This eliminates extra couplings, fittings and pipe commonly used in old style meter settings. Puts valve about 2" closer to meter, saving valuable space, particularly in a meter box.

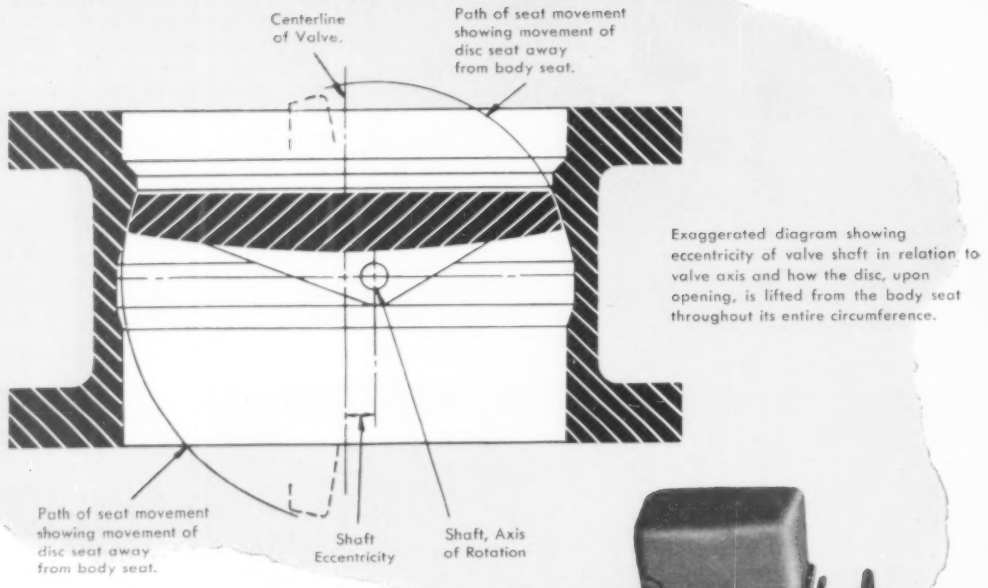
Ford Ringstyle Valves for connecting to copper have beveled end built into basic design to eliminate cumbersome, loose washer. Fitting is threaded to take standard copper tube nut.

Ringstyle Valves are made in straight and angle patterns, of inverted-key and compression types and for iron and copper connection. Free samples available to water works men.

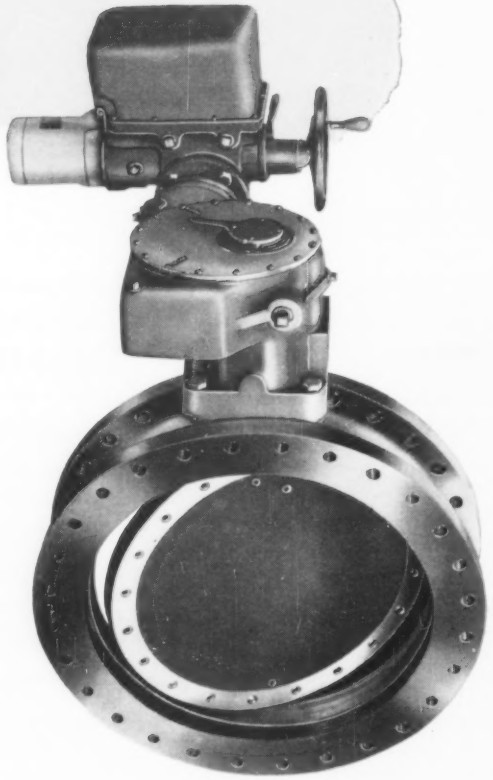
FORD

FOR BETTER WATER SERVICES

THE FORD METER BOX COMPANY, INC. Wabash, Indiana


Centerline of Valve.
Path of seat movement showing movement of disc seat away from body seat.
Path of seat movement showing movement of disc seat away from body seat.
Shaft Eccentricity
Shaft, Axis of Rotation

Exaggerated diagram showing eccentricity of valve shaft in relation to valve axis and how the disc, upon opening, is lifted from the body seat throughout its entire circumference.



How **DARLING-PELTON BUTTERFLY VALVES** lick common problems!

Problem No. 1—COMPLETE SHUTOFF. With a continuous, 360 degree, rubber sealing ring, uninterrupted by the valve shaft, *drop-tight* shutoff becomes possible!

Problem No. 2—SEAT LIFE. With the valve disc swinging on an axis eccentric to the valve centerline, the disc lifts away from the body seat upon opening—abrasion and distortion are avoided. Moreover seat life is further prolonged by easy, compensative adjustment.

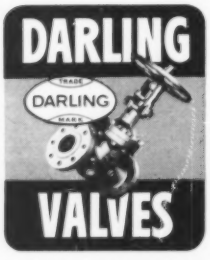
Problem No. 3—MAINTENANCE. Minimized and simplicity itself due to the unique seat ring principle. No sealing problem around the shaft. The rubber seat is replaceable in or out of the line without dismantling the valve!

Get *all* the facts on performance, sizes and constructions made to A.W.W.A. Specifications. Send for Bulletin 5904.

DARLING VALVE & MANUFACTURING CO.

Williamsport 10, Pa.

Manufactured in Canada by The Canada Valve & Hydrant Co., Ltd., Brantford, Ont.



A combination of draftsmanship and artistry went into the scale model of Waterbury, Conn. Shown here are Mr. Anthony Mirto, City Planner, and Mrs. Charlotte Clark, who made this model study of the city.

Waterbury, Conn., Plans Its Future

. . . with the help of a detailed, city-wide scale model

By **CHARLOTTE CLARK**
City Plan Commission

The City Plan Commission of Waterbury, Conn., believes that forethought today means comfort and good living tomorrow. Working in close harmony with the Connecticut State Highway Department, the City Plan Commission feels that the proposed Interstate Highway 84 and the relocation of Route 8 through Waterbury are designed to benefit not only travel, business, and industry, but the entire economy of the Naugatuck Valley. Through funds allocated by the federal government and the State of Connecticut, this big undertaking will be completed in several years.

When finished, it will change the face of the city radically and will add immeasurably to its convenience and growth.

The commission also believes that "a picture is worth a thousand words." Consequently, under the supervision of its City Planner, Mr. Anthony Mirto, and Mr. Richard P. Crane, Chairman of the City Plan Commission, a three-dimensional relief map has recently been constructed, showing the city in miniature, complete in every detail, with particular emphasis on the proposed two-level expressway and its many ramps connected to the city's streets. Whereas an ordinary map of the project would give the observer only a partial idea, this model supplies a perfect picture of the expressway. It is the best possible means of conveying the plan to the general public.

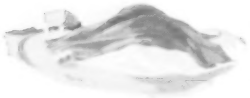
The model is 3½x4 feet and is made to a scale of 200 feet to the inch. The materials used for the terrain, for buildings, bridges, rivers; trees and so forth are manifold, balsa wood, papier mache, plaster of paris, paint, construction paper, cellophane, and various other things.

Bright, shiny automobiles, shorter than one's fingernail, dot the streets, the parking areas, and the expressway. Incidentally, the expressway and all its exits are painted a gleaming silver to glamorize and accent this future project and to make it stand well apart from its surroundings. The arrows on it indicate the direction of traffic flow,

*Mrs. Clark is a draftsman-artist on the staff of the Waterbury City Plan Commission. The model study described in the article is entirely her handiwork, except for guidance supplied by Mr. Anthony Mirto, City Planner.

Keep pavements bare all winter with Solvay Calcium Chloride

—SALT MIXTURES



This winter use the method of leading turnpikes that achieve "no shut-down" records despite the severest weather. Combine Solvay® Calcium Chloride with salt. Make sure you have ample stocks on hand, at money-saving bulk rates.* It can be stored alone, or mixed with salt, outdoors under tarpaulin covers, in indoor sheds or covered bins.

Bulk handling of Solvay Calcium Chloride is a one-man operation, both in loading and application. It can be used economically by large and small highway departments.

Calcium chloride-salt mixtures are effective at all temperatures and humidities. While salt's best range is 25-32°F., calcium chloride speeds melting at all temperatures, even down to below zero . . . provides the moisture salt needs to act. Calcium chloride liberates heat as it melts ice, which helps salt work faster. When you combine the two, applications can be lighter and less frequent. This reduces chemical consumption and lowers cost.

For *instant* skidproofing of icy surfaces, treat abrasives with Solvay Calcium Chloride. They hold fast in wind and traffic at all temperatures.

**Also available in moistureproof bags.*

Write us now. Request "ice control data." If you are interested in applying bulk handling to your set-up, ask for a Solvay representative to call. No obligation!

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SOLVAY PROCESS DIVISION
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SOLVAY branch offices and dealers are located in major centers from coast to coast.

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Range 373 has symbolized the top quality Police and Fire Department Uniform Fabrics for over 25 years.

It is made in all weights for all climates.

Stock dyed
2 ply
Fast Colors
Uniformity of Shade

Corresponding qualities in worsted whipcords and elastiques; gabardines and tropicals in either 100% worsted or worsted/dacron blends.

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for additional information write to—
David E. Singer, Sales Agent
FRANKLIN WORSTED COMPANY
40 East 34th St., New York 16, N. Y.

west on the lower level and east on the upper level.

Waterbury's important landmarks are modeled recognizably. Near the center of Waterbury, over the Republican-American News Building and railroad station is the familiar Italian bell tower patterned after the original one in Siena, Italy. This old, revered tower is by far the tallest building in the city, though in our replica it is but a few inches high. Beyond the freight yards is the huge gas tank, made in our model from a one-inch dowel rod! The railroad tracks are contrived from lengths of black linen thread, and riding realistically on them is a long freight train, each car of which is shaped from a sliver of balsa wood.

On a rising slope one sees the familiar City Hall carved inch high from plaster of paris and topped by a gold dome no bigger than a drop of water. Many other prominent but tiny buildings scattered throughout the city and all the industrial, business, and residential areas are plainly discerned in their proper locations. On opposite hillsides are the outstanding hospitals, St. Mary's on an eastern ridge and the Waterbury Hospital on a western ridge, each made in detail from scraps of construction paper and paint. Evergreen and deciduous trees fashioned from dyed bits of sponge and papier mache mixture add materially to the landscaping effects.

The Future

In addition to the new two-level expressway, we see other features not in our city at present, but which the city plan commission has recommended for the near future. Up beyond Highland Avenue is the proposed new high school and athletic field, bordered by a prospective park. On the westerly side of Thomaston Avenue is a smart new shopping center, actually still on the architect's drawing table, its design given to us in advance and shown on our map in miniature. North of this proposed shopping center will be the proposed heliport site as recommended by the city plan commission. We have a preview too, of a large motel a block away from the Waterbury Hospital and conveniently located near the ramps of the expressway.

The expressway as proposed will eliminate dilapidated sections of the city, as shown in this attractive model, and will replace them with landscaped areas opening off the many exits of the expressway.

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MAKE YOUR OWN CHOICE!
There are complete lines of Carpenter Emergency Lights for all basic needs . . . the widest choice of powerful, dependable, durable lights available.
WARNING LIGHTS: Vehicle and stationary types . . . colored, flashing, oscillating, revolving!
HANDLIGHTS: Powerful "Portalites" with the famous extra-wide coverage! Rechargeable or dry battery types.
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Your Guide to over 100 Emergency Lights . . . the Carpenter Catalog. Write for copy.
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POWER!
Got a tough boating job? Here's the motor that takes it in stride—Evinrude's 1960 Big Twin! 40 horsepower at 4500 rpm. Big-load power that loves to work. It's as easy to pull over and start as most motors half its size—and thermostatic temperature control keeps it running at peak efficiency in any weather, on any water. Choice of props to fit boat and work. For constant, rugged duty, there's no finer outboard power—or more economical buy—than the stout-hearted Big Twin.
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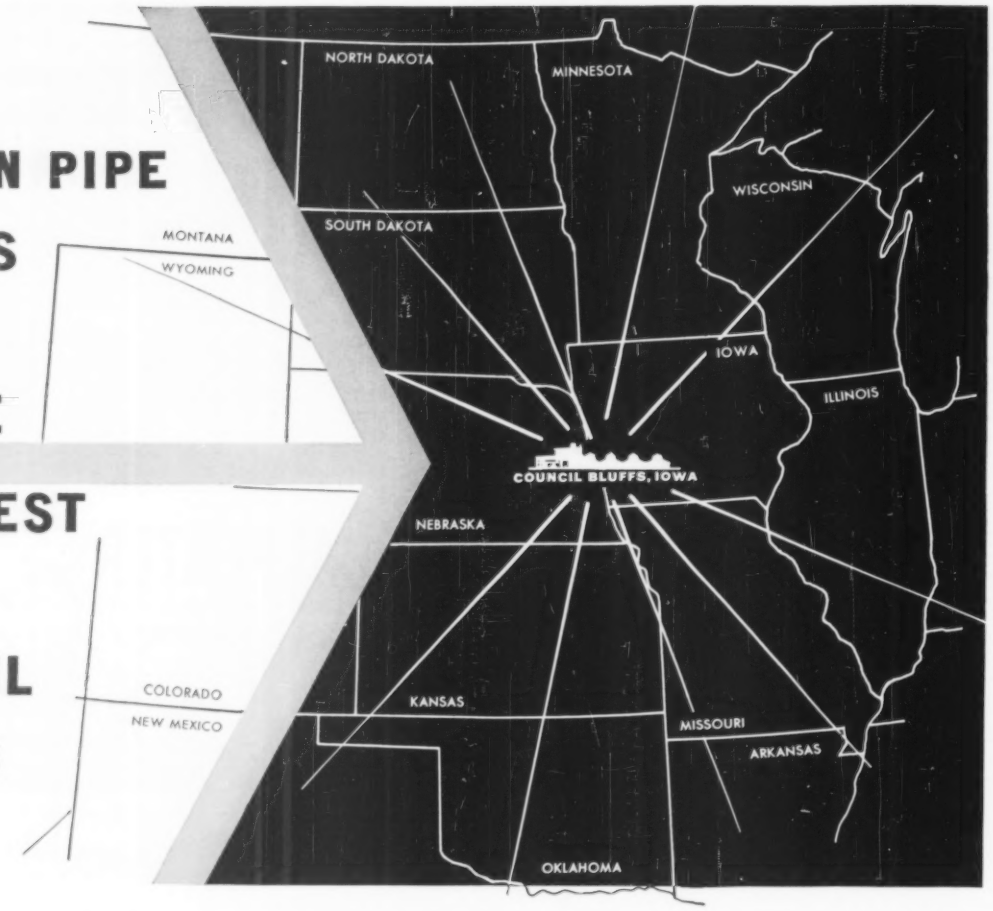
GRIFFIN PIPE SERVES THE ENTIRE MID-WEST FROM COUNCIL BLUFFS



Never before have cast iron pressure pipe users in the Plains States had such a strategically-located source for their pipe needs!

Because Council Bluffs is the transportation hub and heart of this vast area . . . and because the Griffin Pipe plant is served by *nine railroads* alone, in addition to *truck carriers* delivering pipe alongside trench . . . your pipe shipments will reach their destination in record time! This means time and money savings for you. *Also eliminates the need to maintain a large inventory.*

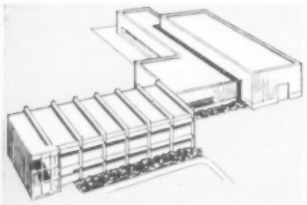
The newly-remodeled Griffin Pipe plant on the Council Bluffs site is the logical source for cast iron pressure pipe users in Missouri, Minnesota, Wisconsin, Illinois, Iowa, Kansas, Nebraska, North Dakota, South Dakota, Oklahoma, and neighboring states.

Griffin is the first American foundry to manufacture cast iron pressure pipe in modern 20-foot lengths, cast by the Delavaud process in the popular 4"-12" diameter size range. The 20-foot length means *10% fewer joints*, with consequent reductions in installation costs.

A complete selection of pipe joints is offered, including patented Bell-Tite *slip-on*, *mechanical joint*, and *bell and plain end*. **Griffin-20*** cast iron pressure pipe will be manufactured in accordance with ASA, AWWA, and Federal Specifications for water and gas distribution.

Take advantage of the strategic location of this new plant . . . and the substantial economies it can effect in *your* pipe installations!

*"Griffin-20" is a trademark of Griffin Wheel Company



Griffin is constructing a new million-dollar pipe research center in Bensenville, Illinois. Griffin founded in 1879, has 11 plants, and has poured more than 15 million tons of iron.

GRIFFIN PIPE
DIVISION
GRIFFIN WHEEL COMPANY
COUNCIL BLUFFS, IOWA

GRIFFIN PIPE DIVISION
COUNCIL BLUFFS

A Report on Milwaukee's Central Stores

By A. L. LEHRBAUMMER
City Purchasing Agent

For many years the Purchasing Department of the City of Milwaukee maintained a storehouse for the distribution of items whose use is common to all city departments. It never achieved maximum value because the storehouse was shifted from location to location with never adequate facilities or space to achieve the full possible savings of a modern warehouse. Eventually the Citizens' Governmental Research Bureau Inc., of Milwaukee, authorized a study of all the city's stores by Albert Pleydell, then Commissioner of Purchase of the City of New York. (A loan copy of the study is available upon request.) As a result funds were appropriated to establish an adequate central storehouse for articles of general use. It was described in THE AMERICAN CITY in September 1956.

New Municipal Warehouse

Milwaukee's new municipal warehouse cost $160,000 in 1953. Its floor area of 22,000 square feet contains stock having an average value of $100,000. We had hoped to have an average turnover of three times annually. However, actual experience has shown that since the warehouse was opened, we have averaged a turnover of approximately twice annually.

A petroleum plant is operated in conjunction with the municipal warehouse. This plant has two 250,000-gallon tanks for regular and premium gasoline and three 15,000-gallon tanks for motor oil and kerosene. Deliveries are made on a schedule to departments who do not have facilities for handling transport or tank car quantities. The turnover of this stock is four times a year.

The advantages of a municipal warehouse are:

Clerical work of buying is reduced;

Standardization program is aided;

Custodial storage for property belonging to other departments is accommodated;

Goods are on hand when needed;

Adequate inspection is possible (it is not economical to test small deliveries at various locations);

Control is better as inventory is under closer observation; and

Quantity buying results in saving.

Typical examples are as follows:

Tri-Sodium-Phosphate — Stock one carload (40,000 lbs.) in 100-lb. drums at 5.68 cents a pound, used for all general cleaning instead of "No-Trik", "Soilax" and other advertised 1-lb. packages selling for about 27 cents a pound. Saving, 475%.

Gasoline, regular—100,000 gallons recently bought for tank storage at 11.9 cents a gallon. Wholesale tank truck price is 13.89 cents a gallon. Saving, 16%.

Mimeo paper—8½ x 11, 20-lb., No. 1 white sulphite—500 reams purchased for storehouse at 1.33 cents. Purchases of 1-10 reams are 2.84 cents. Saving, 113%.

Flashlight batteries, Size D — Stock 19,000 a year, shipped in lots sufficiently large to assure fresh stock, at 9.5 cents each. Retail price 20 cents. The city would have to pay about 13 cents in smaller quantities. Saving, 37%.

Friction tape—Stock approximately 4,500 rolls per year. Ordered out in lots of 1,000 assuring fresh stock at 23.35 cents per roll. If purchased in lots of ten rolls, cost would be 45 cents per roll. Saving, 92%.

Adding machine tape, ⅀1 2-9/32"—stock 1,500 rolls at 13.35 cents each. If purchased in 100-roll lots it would cost 16.56 cents each. Saving, 20%.

Motor oil—purchased in 8,000-gallon tank cars. The price averages 29 cents a gallon for high grade heavy duty detergent oil complying with U. S. Army specifications. This would cost about 70 cents a gallon in drum lots. (Consumers pay about 50 cents a quart for this grade at corner filling stations.) Saving, 250%.

Costs

All contributing costs of operating a warehouse should be computed. These include:

1. Salaries of employees,
2. Motor vehicle rentals,
3. Electric power, light, heat, con-

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SAVE...
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Swenson Spreaders spread salt, calcium chloride, sand, gravel, cinders, or any combination of these materials in any quantity desired . . . in narrow strips or full traffic lanes. Clutch-controlled flow for steady or intermittent spreading. Operates at speeds up to 30 M.P.H. — forward or reverse. Swenson Spreaders are available in various sizes to fit any dump truck box. Fewer trucks, fewer men and less material are needed to spread a given area. This year trim your construction costs with Swenson Spreaders. Write us today!
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McDONALD'S 104 YEARS OF EXPERIENCE STAND BEHIND THIS PRODUCT

McDonald 4701 Corporation Stop—Standard A.W.W.A. thread for copper service pipe. Sizes from ½ inch to 2 inches. A catalog of McDonald's complete line of brass goods is available on request.

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EARTH-BORES HORIZONTALLY . . . SWIFTLY

UP TO 250' OF 2" TO 24" OPEN HOLE FOR PIPE INSTALLATION OR SOIL DRAINAGE

WATER-COOLED BITS RIP THROUGH TOUGH ROOTS AND HARD FORMATION

POWERFUL AIR MOTORS GIVE UNEQUALLED WORKING TORQUE

BORES STRAIGHT, ACCURATE, FAST AND CHEAPLY

NO FUMES OR SHOCKS TO ENDANGER WORKERS *

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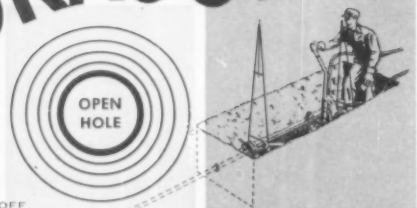

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Ask for Specification BOOKLET GIVING EARTH BORING SPEEDS

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681 Market Street
San Francisco 5, California

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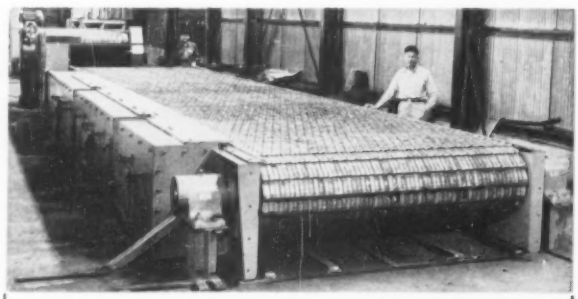


New York's **Successful "CHAIN GRATE" Incinerator**

The above Incinerator was installed in New York City's Gansevoort Refuse Disposal Plant.

Why has our Design proven Best by Test?:

- Cast steel grate surface—non-breakable, trouble-free operation.
- More tuyere sections for better distribution of air.
- Front take-up is easily accessible to operator.
- Patented cast steel links, over-lapping to prevent fouling.
- Continuous discharge of refuse from grate surface.
- Applicable to largest incinerators up to 24-feet wide.
- Minimum labor and maintenance required for operation.
- No heavy stoking or cleaning of fires . . . ease of operation.

ILLINOIS STOKER COMPANY
ALTON, ILLINOIS

sumable supplies, repairs, insurance, water, and similar items.

4. Interest on investment (with rates based on present cost of loans to the agency) which includes:
   a. Average stock value
   b. Building value
   c. Equipment value
   d. Grounds value
5. Depreciation including
   a. Building (Based on a 60-year life)
   b. Equipment (Based on a 20-year life).

This total cost should then be compared with the gross saving which generally is accepted as 30% of the value of the goods handled.

A combination loose-leaf stores catalogue and manual was prepared and distributed among all city departments and other interested people. Besides listing all of the items carried in the central storehouse, it details the procedure for the operation of all city stores which are under the control of the purchasing department.

Collecting Tolls By the Millions

The New Jersey Turnpike Authority, which adopted electronic computer methods in 1957, recently installed a Univac Solid-State Computer by Remington Rand Division of Sperry Rand Corporation. The new computer, capable of making more than 10,000 additions or subtractions per second and storing more than 50,000 characters of information in its "memory," can be used for many other purposes including cost distribution and personnel records.

Joseph Morecraft, Jr., Chairman of the Turnpike Authority, points out that vehicular traffic has been "increasing by the millions yearly, and when you realize that there are 3,528 possible rate combinations for processing toll cards on this heavy traffic you can begin to appreciate our paperwork problem." Nearly 42,000,000 cars, buses and trucks traveled the Turnpike last year.

"Solid-State" means that the computer is designed to operate without vacuum tubes. Printed circuitry, transistors and Ferractors are used instead. This also does away with the need for special air-conditioning which is required for vacuum-tube systems. Ferractors, the technicians point out, operate accurately at temperatures ranging from 60 degrees below zero Fahrenheit to 220 degrees above.

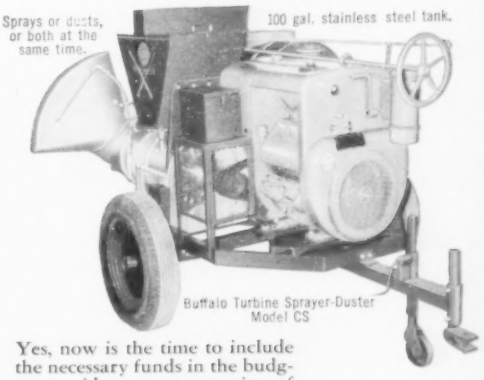
New Weed Killers to Be Discussed

The use and effectiveness of new herbicides for control of weeds will be discussed in two public health sessions of the Weed Society of America during its third biennial meeting in Denver, Colorado, February 22-25, 1960.

Control of ragweed, poison ivy and other weeds of the western United States in municipalities, along highways and streets, in connection with agricultural crops and along utility rights of way, will all be covered, together with evaluation of results, accomplishments and advances in methods and equipment.

More than 700 persons are expected to attend, including representatives from Alaska and Hawaii. Plans for the organization of a Public Health Section in the Western Weed Control Conference also will be discussed.

Insure against flies and mosquitoes next summer by including Buffalo Turbine Sprayers in your budget NOW



- Enjoy longer lasting, more efficient, wide-area insect control for as little as 15 cents per acre.
- Penetrates a city block from vehicle on the street.
- Does not spot cars, homes or windows.
- Covers 50 acres per hour.
- Kills more flies and mosquitoes at lower cost than any other method.

Yes, now is the time to include the necessary funds in the budget to rid your community of disease carrying flies and mosquitoes. And the most efficient, most economical equipment you can buy is the Buffalo Turbine Sprayer-Duster that permits TURBO-SPRAYING of liquids for larviciding or TURBO-DUSTING for adult insect control. These methods can be carried out separately or simultaneously as desired.

A powerful "Turbulent Air" blast atomizes and blows spray or dust (velocity up to 180 M.P.H., volume 14,000 cu. ft. of air per minute) in a controlled pattern.

Low initial and maintenance costs make this the most economical control equipment available today!

Buffalo Turbine Sprayer-Duster operated from pickup truck in action at Lawton, Oklahoma.

Write for literature and prices.

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69 Industrial Street • Gowanda, N. Y.

Uses hundreds of

IOWA FIRE HYDRANTS and GATE VALVES

IOWA Fire Hydrants and Gate Valves form an important part of the more than $4,000,000 investment in water and sewage facilities for a completely new "City Within a City", a Perini-Westward development, entirely within the city limits of West Palm Beach, Florida. One of the owners is Louis R. Perini, Chairman of the Board of the Milwaukee Braves and President of Perini Corporation.

The eye-catching central pavilion dominates a 12-acre exhibit in the nine-square-mile area where more than 40,000 people are expected to live. Hundreds of Iowa valves and hydrants were installed to control the flow of water and provide fire protection throughout the 100 miles of cast iron water mains serving this $450,000,000 development.

The IOWA products were selected because of their proved long life and easy maintenance... plus the assurance that parts and replacements will be always available. Such longtime future service is an important part of every purchase of IOWA products.

One of hundreds of IOWA fire hydrants and gate valves being installed at Perini-Westward development within the city limits of West Palm Beach, Fla.

Let us send you details on IOWA's *complete line of valves and hydrants*

IOWA VALVE COMPANY

Oskaloosa, Iowa

A subsidiary of James B. Clow & Sons, Inc.

ZONING AND PLANNING NOTES

Edited by NORMAN WILLIAMS, Jr.

Variances—Specific Findings of Fact Required

ILLINOIS. *Lindburg* v. *Zoning Board of Appeals of the City of Springfield*, 133 North Eastern (2d) 266 (Supreme (highest) Court, March 22, 1956).

In this case, permission was sought to remodel residential buildings, located in a restrictive residential district, into apartment houses of a type permitted in a much less restrictive district. A variance was granted for this purpose, without any findings of fact indicating the reason for the variance. The Court therefore reversed the order granting the variance, on the grounds that the grant of a variance required a detailed finding of fact, and that this requirement was not satisfied by parroting the highly generalized statutory phrases "practical difficulties" and "particular hardship." By thus disposing the case on non-constitutional grounds, the Illinois Court by-passed the question of whether the orthodox provisions for hardship variances might now be constitutional in Illinois, contrary to the old ruling in *Welton* v. *Hamilton*, 344 Illinois 82, 176 North Eastern 333.

The constant judicial rulings to this effect bear eloquent witness to the fact that local Boards of Appeals continue to ignore such rulings.

Residential and Industrial Zoning—Mapping

PENNSYLVANIA. *Tidewater Oil Company* v. *Poore*, 149 Atlantic (2d) 636 (Supreme (highest) Court, March 16, 1959).

In this case, a strip of farm land zoned for residential use was located on a slight rise partially wedged in between two adjacent lowland areas used by oil companies. The residential restriction was challenged by an oil company seeking permission to use the land for another tank farm. The lower Court invalidated the restriction, on the ground that previous legislative changes had created an industrial trend in the area, which it was now too late to stop.

In the opinion the Court held that, if the Township so desired, it had the legal power to decide to stop such a trend, and further that there was considerable question whether such a trend existed in any event.

> "Whether that trend actually exists or not may be disputed, but, in any event, it is for the township to decide whether, if the trend exists, it should be halted. In addition to its large manufacturing areas, Delaware County is blessed with beautiful home and farm land. The local authorities probably reasoned that industry was creeping up too close to this home land, menacing the health and welfare of its people, and threatening it with large ungainly depots and ponderous machinery, crushing out the rural beauty and scenic harmony of the township. They wished to prevent what they foresaw. There is always a point before a threatened collapse materializes, when something may be done to prevent the break. It may well be that if the legendary additional straw had not been loaded on to the camel's back, that proverbial dromedary might have lived out a long life, with vertebrae intact, each hump upright and proud of the part it played in helping to transport the world's burdens.
>
> "But, discussion of an industrial trend, and whether it should be stopped, is more academic than practical because we do not see in the record the engulfing industrialization which appeared to have overawed the Court below. However, even if we accept its hypothesis, this does not mean that that creeping glacier of industrialization could not be stopped. To accept the Court's reasoning would be to say that no municipality has the power to limit an encroaching imperilment. It would be to say that land contiguous to an industrial district, though zoned residential, must now also become industrial because of contiguity alone, and that, through a process of chain reaction, all resi-

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They tell us it's a growing America.

It is.

You know already you'll need to expand to keep pace with demand.

That's why the V-notch Chlorinator has such tremendous range. The precision shaped groove in a V-notch plug is made to control chlorine completely to one eight-hundredth of the maximum capacity of your machine. In fact, this is standard in some of the V-notch chlorinators.

Your W&T representative will help you size your V-notch chlorinator so that when your treatment needs step up—you simply snap in the next size rotameter.

Without buying a new machine, you get the same quick, accurate control in a new working feed range.

And, of course, the right plastics make the whole chlorinator chlorine-proof.

A booklet, "The V-notch Story" will tell you about all the W&T V-notch Chlorinator features. For your copy write Dept. S-133.00

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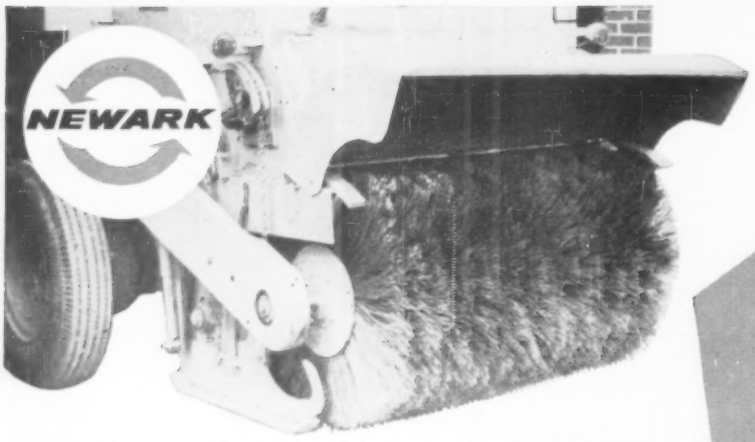

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Here's why! . . . New, round brush wire, permanently locked in place and uniformally distributed by Danline's unique construction, produces the wearing and sweeping qualities you are looking for . . . In addition to longer life, you can remove up to 10" of sand in a single pass — even handle heavy loads of dirt, snow, gravel, etc. . . . Danline has been test-proven over countless thousands of sweeping miles by hundreds of municipalities . . . Write or call for complete, illustrated brochure, then watch your Danline and see for yourself!

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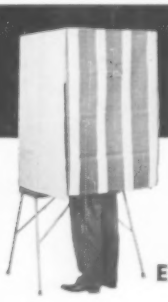

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Douglas Uni-pack provides 6'1" x 28" x 28" single stall booth yet collapses to suitcase size. Easy to carry and set up by any woman election offical. Ideal for augmenting voting facilities during rush periods. Now being used by all regional offices of National Labor Relations Board.

Vote by Ballot with DOUGLAS VOTING BOOTHS

★Small investment ★Storage and transportation costs are nil ★No breakdowns and maintenance ★No standing in line by use of plenty of low-cost units ★Only sure way of casting your personal vote

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DOUGLAS MFG. CORP.
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★ Serving the entire United States and Puerto Rico since 1910

Complete, year-round grounds maintenance costs can be cut to the bone with Gravely.

The precise control, amazing ease of operation and riding comfort of the Steering Sulky with 75"-cut Gang Mowers make large-area mowing quick and easy. Now, new Lawn Sweeper and Aerator also available. 3 models, 3 ground speeds available.

In all, the powerful Gravely offers 30 sturdy, performance-proved tools that solve every 12-month maintenance job—FASTER! BETTER! EASIER! . . . All-gear Drive, Power Reverse, Precision Control, Push-Button Starter.

Free "How to Cut Costs for Grounds Maintenance" Booklet tells you all about America's most efficient, most versatile small tractor. Write for it *Today!*

GRAVELY TRACTORS, INC.
BOX 636-A DUNBAR, W. VA.

PERFORMANCE-PROVED SINCE 1922

dential land must eventually become industrial land. But neither law nor logic approves of this chameleon process. So long as a property owner is treated in accordance with standards of justice and fairness, he may not complain that a township, concerned about maintaining its predominating rural and residential characteristics, builds dikes to prevent the spread of a flood of steel and iron."

While the oil company argued, that, in view of the existing tank farms, one more could do no harm, the Court squarely rejected this argument:

"The lower Court argued that since the Sinclair Oil Company has already erected tanks in the disputed area, there should be no objection to the erection of other tanks. But this point of view overlooks the realization that because one may stand so much unpleasant odor, peril, and unsightliness, does not mean that there is no limit to his tolerance. There can be a saturation point in every aspect of human absorption. The record clearly establishes that the operation of a petroleum storage depot as the one proposed here carries with it a substantial risk to health and safety. One witness testified that the fumes issuing from the Sinclair tanks were so bad 'you could not even light a match, you would be afraid.' An engineering expert testified that vast quantities of stored gasoline and oil would create a serious hazard from fire, spillage and fumes, and that this hazard would be constant, despite how the tanks might be constructed or inspected. Evidence that the tanks were to be of the 'floating-roof' type (with the roof floating on the surface of the liquid, the tank thus expanding as more liquid is added), would speak for not only the possibiltiy, but the probability of vapor leakage. It would be a strange community indeed whose representatives would not weigh the dangers attendant upon the planting on its land of vast vats of conceivable catastrophe."

"The township authorities have the right to refuse to allow in the midst of its territory an omnipresent, possible disaster. No one could reasonably object if the township declined to permit a tiger farm within its geographical limits, regardless of the height of the walls built around the tigers, and regardless how expert might be the tiger trainers employed to guard these creatures of the jungle. The township authorities may equally refuse to allow dangerous fuel tanks in its residential district, even with whatever guarantees of safety the tank builders might make."

Lincoln, Ill., Okays Bicycle Law

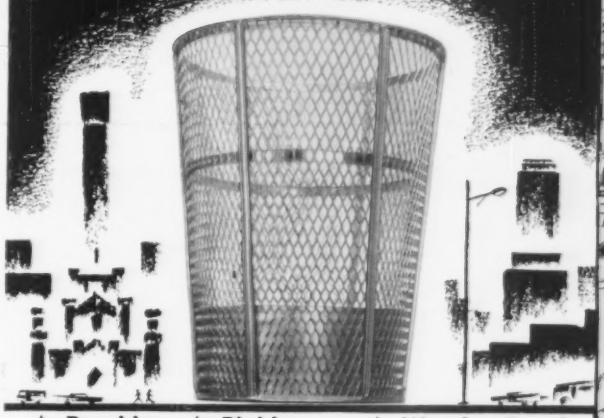
An ordinance to license and regulate bicycles in Lincoln, Ill., went into effect on January 1st of this year. The law, passed by the City Council last September, specifies inspection requirements, regulations, and penalties. Renewal is deferred until July 1, 1961, and every year thereafter.

Licenses will cost applicants fifty cents.

DEMCOR E-X-P-A-N-D-E-D METAL

LITTER BASKETS

Help keep your city CLEAN



Bus Stops

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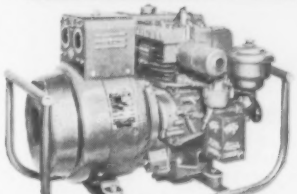

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LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Building Permits For "Town-Houses" Ordered

In action to compel village to issue permits for construction for town-house buildings in commercial districts, held since owner had invested substantial funds in plans and permits prior to zoning amendment it was entitled to complete construction. *People* v. *Village of Morton Grove*, 157 N.E.2d 33 (Ill., March 20, 1959)

City Employees— Unpaid Salaries Ordered Paid

In action by city employees to recover unpaid portions of salaries allegedly due them, held fact that department had not received full appropriation which it sought would not relieve it of obligation to pay salaries. *Grosso* v. *City of Paterson*, 150 A.2d (N.J. Super., Law Div., March 26, 1959)

City Manager—Suspension Approved

In action to compel city council to remove suspension of city manager and to reinstate him to office, held since council acted properly and manager not entitled to judicial hearing petition dismissed. *Nugent* v. *Leys*, 149 A.2d 716 (R.I., March 26, 1959)

Civil Service Board—Creation Upheld

Where local act creating civil service board gave members right to restrict mayor and council in exercise of power to appoint and related powers, held act valid. *State* v. *Cole*, 110 So.2d 273 (Ala., March 12, 1959)

Condemnation—Damages For Partial Taking of Building Upheld

In condemnation proceeding for purpose of widening of highway, held taking of front 35 feet of building effected substantial destruction of building within meaning of zoning ordinance. *State* v. *Pahl*, 95 N.W.2d 85 (Minn., Feb. 20, 1959)

Intoxicating Liquor—Sale to Minor— License Suspended

In proceeding for revocation of liquor license on ground that licensees permitted minors on premises and permitted premises to be used for immoral purposes, held revocation of license changed to suspension for 100 days. *In Re Restaurant Liquor License* R-6302, *etc.*, 149 A.2d 539 (Pa. Super. Ct., March 18, 1959)

Milk Vending Machine in Apartment— Zoning Violation

In action concerning operation of coin-operated milk-vending machine in residential apartment building, held such use commercial enterprise and not accessory to residential use and hence invalid. *Dellwood Dairy Co.* v. *City of New Rochelle*, 184 N.Y.S.2d 656 (N.Y. Sup. Ct., App. Div., March 30, 1959)

Pensions—Increase Denied

Where city had no legal obligation to permit employee to become eligible for retirement, employee voluntarily assented to conditions upon which city was willing to permit her to earn pension, held application for increased pension denied. *Mollett* v. *City of Tacoma*, 337 P.2d 48 (Wash., March 19, 1959)

Taxation—License Tax on Steamship Agent Invalid

Where city assessed mercantile license tax on gross receipts of general steamship agent for eight steamships operating solely in foreign commerce, held assessment invalid. *City of Philadelphia Tax Rev. Bd.* v. *Norton Lilly & Co.*, 149 A.2d 672 (Pa. Super. Ct., March 20, 1959)

Taxation—Property Held Under Lease From RFC Is Taxable

In action by aircraft company to recover real estate taxes already paid on property held under lease from RFC, held since property was taxable under RFC act and was not in process of being disposed of refund denied. *Rohr Aircraft Corp.* v. *County of San Diego*, 336 P.2d 521 (Cal., March 17, 1959)

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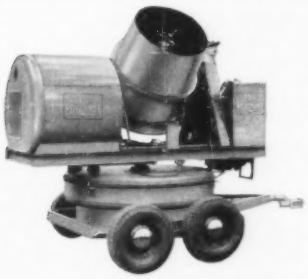

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Consulting & Design Engineers: Greeley & Hansen, Engineers
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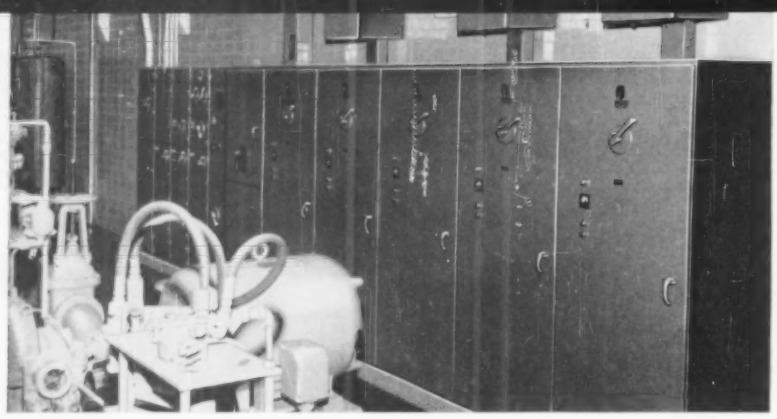

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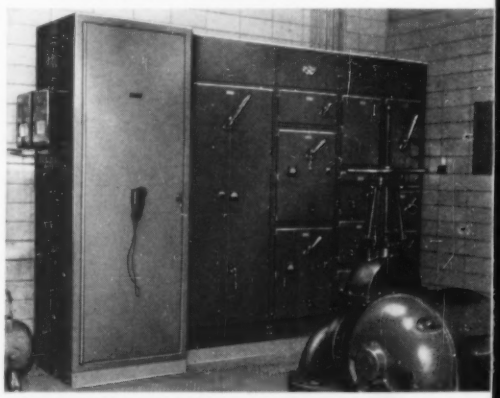

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RECENT CITY MANAGER APPOINTMENTS

George G. Bundy, Jr.
Santa Monica, Calif.

Gordon Dillon
Ipswich, Mass.

Walter L. Maclachlan
Aberdeen, Md.

Fred E. Weisbrod
Oakridge, Tenn.

Max N. Rhoads
Owensboro, Ky.

Earl P. Wagner
Fridley, Minn.

KENNETH D. BOEHNER, manager of Northumberland, N. H., has recently been appointed as manager of Hampton, N. H., succeeding John P. Batchelder.

GEORGE BUNDY, assistant city manager of Santa Monica, Calif. for the past nine years, was recently appointed manager of that city, succeeding R. M. Dorton, who has retired.

RAYMOND S. COX, JR., formerly manager at Princess Anne, Md., Clarks Summit and Sharpsville, Pa., was recently appointed the first manager of Madeira, Ohio. Mr. Cox was previously an attorney practicing in Washington, D. C.

L. B. CRESSWELL, manager of Meridian, Miss., for the past three years, is the new manager of Vienna, Va., succeeding Brent Remsburg, now manager at Herndon, Va.

GORDON DILLON, formerly manager at North Adams, Mass., is the new manager of Ipswich, Mass., succeeding Norris W. Stilphen, now manager at Deerfield, Ill. Mr. Dillon was previously manager at Claremont, N. H., and assistant manager at Quincy, Mass.

RUSSELL DRAPER is the new manager of Lincoln, Calif., succeeding Richard L. Curtis, who resigned recently.

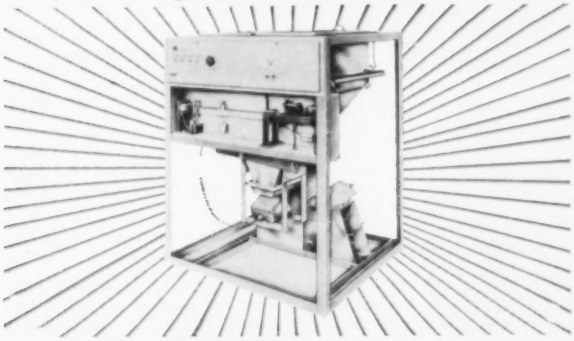
J. A. FLEMING, manager at Tucumcari, N. M., was appointed manager of Las Cruces, N. M., succeeding Patrick McClernon. He was previously manager of Van Horn and McCarney, Tex.

HUGH T. HENRY, manager at Lebanon, Mo., is the new manager of Haltom City, Tex., succeeding R. M. Bingham, now manager of Harlingen, Tex. He was manager at Lombard, Ill., Claremore, Okla., and administrative assistant at Maywood, Ill.

HERBERT KEINATH, superintendent of public works in Frankenmuth, Mich., has been appointed that city's first manager.

(Continued on page 170)

accurate, dependable, continuous weigh feeding of dry chemicals in water and sewage treatment with . . .



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WEIGH FEEDER MACHINES

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With SYNTRON Weigh Feeders you are assured an accurate amount of material has been injected into the process at a smooth, even rate over a given period.

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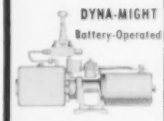

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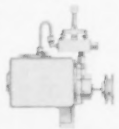

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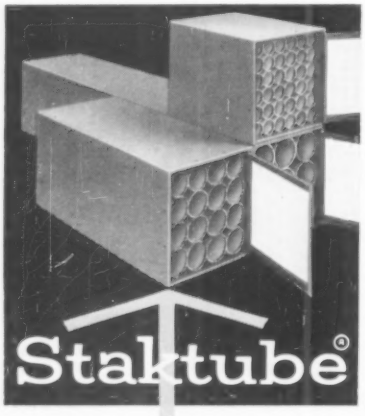

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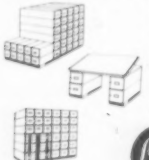

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(Continued from page 169)

CLIFTON LEE, for the past three years city clerk of Cushing, Okla., was recently appointed manager of that city, succeeding L. L. Houston, who resigned.

WALLACE E. LUNDQUIST, city clerk of Willcox, Ariz., for the past 12 years, was recently appointed the first city manager of that city.

WALTER L. MACLACHLAN, retired colonel, U. S. Army, was recently appointed manager of Aberdeen, Md., succeeding Milton B. Millon, who resigned to accept the position of Director of the Municipal Technical Advisory Service at the University of Maryland. Mr. Maclachlan was previously a school teacher.

DAVID R. MORGAN has recently been appointed as the first manager of Yukon, Okla.

PAUL A. ROWLEY, administrative coordinator and purchasing officer of Gardena, Calif., has recently been appointed as the first administrative officer of that city. Mr. Rowley has previously served as superintendent of the municipal bus lines, and chief of the license and tax departments in Gardena.

HAROLD K. SCHONE, director of the public works department, Oakland Co., Mich., was recently appointed manager of Arcadia, Calif., succeeding Neil F. Anderson. Mr. Schone has also served as manager of Harbor Springs, Oak Park, and Birmingham, Mich.

JOHN D. SLATER, manager at Los Gatos, Calif., has been recently appointed manager of Carlsbad, Calif., succeeding U. Max Palkowski. Mr. Slater was previously administrative assistant at Oceanside, Calif.

MAX N. RHOADS, who has been the director of finance and purchasing agent of Owensboro, Ky. for the past three years, was recently appointed manager of that city. He is the successor to Ernest M. Ford.

JAMES R. SCHUBERT, formerly manager at Otsego, Mich., succeeds Francis M. Hoag as manager of Crystal Lake, Ill. He has been assistant manager in Westerville, Ohio, and manager of Lake Mills, Wis.

FRED E. WEISBROD, manager at Painesville, Ohio, for the past two years, has been appointed the first manager of Oak Ridge, Tenn. Mr. Weisbrod served as manager of Oberlin, Ohio, for two years and as assistant to the director of public works at Silver Springs, Md.

E. ROBERT TURNER, manager at North Miami, Fla., for the past seven years, is the new manager of Boulder, Colo., succeeding M. Don Harmon, now manager at Joplin, Mo. Mr. Turner has also served as manager at Brookfield, Mo.

EARL P. WAGNER, formerly manager at Fairborn, Ohio, was recently appointed manager of Fridley, Minn., succeeding Clarence E. Maddy. Mr. Wagner also served as manager at Wayzata, Minn., and Negaunee, Mich.

DONALD P. WOLFER, public administration advisor to the government of Chile for the ICA, is the new manager of Fort Lauderdale, Fla., succeeding William J. Veeder, now manager at Charlotte, N. C. Mr. Wolfer, who was manager of Fort Lauderdale in 1954 and 1955, has also served as manager at Tucson, Ariz., and Albany and Cairo, Ga.

ORIN F. NOLTING
Executive Director
International City Managers' Association

CONVENTIONS — WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

Jan. 11-15—Washington, D. C.
HIGHWAY RESEARCH BOARD. Annual Meeting (Sheraton-Park Hotel). Dir., Fred Burggraf, Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

Jan. 18-21—Cincinnati, Ohio
AMERICAN ROAD BUILDERS' ASSOCIATION. Annual Convention (Netherland Hilton Hotel). Exec. Vice Pres., Louis W. Prentiss, 600 World Center Bldg., Washington 6, D. C.

Jan. 20-22—New York, N. Y.
NEW YORK SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Meeting (Park Sheraton Hotel). Exec. Sec., R. C. Sweeney, State Department of Health, 55 Church St., White Plains, N. Y.

Jan. 25-27—Memphis, Tenn.
ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS. Annual Meeting (Peabody Hotel). Sec.-Treas., Ward K. Parr, 1224 E. Eng. Bldg., Box 619, Ann Arbor, Mich.

Jan. 28-30—Hollywood, Calif.
CALIFORNIA STREET & HIGHWAY CONFERENCE. Annual Meeting (Hollywood-Roosevelt Hotel). Sec., Bob Glenn, I.T.T.E., University of California, Berkeley, Calif.

Feb. 3-5—Indianapolis, Ind.
AMERICAN WATER WORKS ASSOCIATION—Indiana Section. Annual Meeting (Sheraton-Lincoln Hotel). Sec.-Treas., Chester H. Canham, 1330 W. Michigan St., Indianapolis 7, Ind.

Feb. 8-10—New York, N. Y.
ASSOCIATION OF TOWNS OF THE STATE OF N. Y. Annual Meeting (Commodore Hotel). Exec. Sec., William K. Sanford, 91 State Street, Albany, N. Y.

***Feb. 22-25—Denver, Colo.**
WEED SOCIETY OF AMERICA. Biennial Meeting (Cosmopolitan Hotel). Sec., Alfred H. Fletcher, Div. of Environmental Health, Dept. of Health, Trenton 25, N. J.

Feb. 23-26—Santa Monica, Calif.
CALIFORNIA MUNICIPAL UTILITIES ASSOC. Annual Meeting (Miramar Hotel). Sec., F. V. Frey, 100 N. Garfield Ave., Room 108, Pasadena, Calif.

Feb. 28-March 4—College Station, Tex.
TEXAS WATER & SEWAGE WORKS ASSOC. Annual Short School (Memorial Student Center, Texas A & M College). Sec., G R. Herzik, Jr., 2202 Indian Trail, Austin, Tex.

March 6-12—San Francisco, Calif.
AMERICAN CONCRETE PIPE ASSOCIATION. Annual Convention (The Fairmont Hotel). Managing Dir., Howard F. Peckworth, 228 N. LaSalle St., Chicago 1, Ill.

March 16-18—Chicago, Ill.
AMERICAN WATER WORKS ASSOC.—Illinois Section. Annual Meeting (Pick-Congress Hotel). Sec., Dewey W. Johnson, Cast Iron Pipe Research Assoc., 3440 Prudential Plaza, Chicago 1, Ill.

March 16-18—Little Rock, Ark.
ARKANSAS WATER & SEWAGE CONFERENCE. Annual Meeting (Marion Hotel). Sec., C. W. Oxford, College of Engineering, Univ. of Ark., Fayetteville, Ark.

March 20-23—Savannah, Ga.
AMERICAN WATER WORKS ASSOC.—Southeastern Section. Annual Meeting (De Soto Hotel) Sec.-Treas., N. M. de Jarnette, 309 State Office Bldg., Atlanta 3, Ga.

March 21-24—San Francisco, Calif.
THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA. Annual Convention (Masonic Temple). Exec. Dir., James D. Marshall, 20th & E Sts., N.W., Wash 6, D. C.

***March 23-25—Corvallis, Ore.**
NORTHWEST HIGHWAY ENGINEERING CONFERENCE. First meeting of the combined Conference on Road Building and Northwest Traffic Engineering Conference. (Oregon State College). Sec., Martin P. Coopey, Apperson Hall, Oregon State College, Corvallis, Ore.

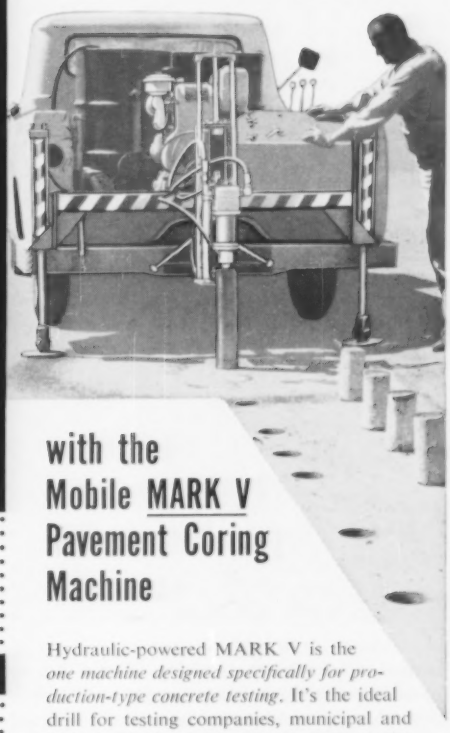
March 29-April 1—Philadelphia, Pa.
ASSOCIATION OF HIGHWAY OFFICIALS OF THE NORTH ATLANTIC STATES. Annual Meeting (Bellevue-Stratford Hotel). Exec. Sec., Kenneth D. Rice, 1035 Parkway Ave., Trenton, N. J.

March 30-April 1—Atlantic City, N. J.
NEW JERSEY SEWAGE & INDUSTRIAL WASTES ASSOC. Annual Meeting (The Traymore Hotel). Sec.-Treas., Michael S. Kachorsky, P. O. Box 68, Manville, N. J.

***April 5-7—Binghamton, N. Y.**
AMERICAN WATER WORKS ASSOC.—New York Section. Annual Meeting (Sheraton-Binghamton Hotel). Sec., Kimball Blanchard, Neptune Meter Co., 22-22 Jackson Ave., Long Island City, N. Y.

(Continued on page 172)

drill ONE INCH every 30 Seconds in steel-reinforced concrete



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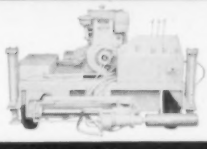

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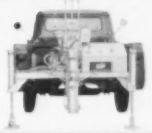

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(Continued from page 171)

April 12-15—Los Angeles, Calif.
AMERICAN SOCIETY FOR PUBLIC ADMINISTRATION. Annual Meeting (University of Southern California). Exec. Dir., Robert J. M. Matteson, 6042 Kimbark Ave., Chicago 37, Ill.

***April 18-21—Lafayette, Ind.**
PURDUE ROAD SCHOOL. Annual Session (Memorial Center, Purdue Univ.). Sec., J. F. McLaughlin, School of Civil Engineering, Purdue Univ., Lafayette, Ind.

***April 24-27—Charleston, S. C.**
NATIONAL ASSOC. OF HOUSING & REDEVELOPMENT OFFICIALS—Southeastern Regional Council. Annual Meeting (Francis Marion Hotel). For information: National Assoc. of Housing & Redevelopment Officials, 1313 E. 60th St., Chicago 37, Ill.

***April 24-27—Buffalo, N. Y.**
AMERICAN WATER WORKS ASSOC.—Canadian Section. Annual Meeting (Statler Hotel). Sec.-Treas., Dr. A. E. Berry, 72 Grenville St., Toronto, Canada.

***April 27-30—Berkeley, Calif.**
CALIFORNIA SEWAGE & INDUSTRIAL WASTES ASSOC. Annual Meeting (Claremont Hotel). Sec.-Treas., Alfred D. Leipzig, c/o Hyperion Treatment Plant, 12000 Vista del Mar, Venice, Calif.

***April 28-30—Billings, Mont.**
AMERICAN WATER WORKS ASSOC.—Montana Section and MONTANA SEWAGE & INDUSTRIAL WASTES ASSOC. Joint Meeting (Northern Hotel). Sec.-Treas., A. W. Clarkson, c/o State Board of Health, Helena, Mont.

***April 28-30—Tucson, Ariz.**
ARIZONA SEWAGE AND WATER WORKS ASSOC. and AMERICAN WATER WORKS ASSOC. —Arizona Section. Joint Meeting (Pioneer Hotel). Sec., A. D. Cox, 2612 N. 16th St., Phoenix, Ariz.

May 3-5—Washington, D. C.
AMERICAN PUBLIC POWER ASSOC. Annual Meeting (Hotel Shoreham). Gen. Mgr., Alex Radin, American Public Power Assoc., Suite 830, 919 18th St. N.W., Wash. 6, D. C.

May 10-12—Washington, D. C.
NATIONAL HIGHWAY USERS' CONFERENCE. Biennial Convention (Mayflower Hotel). Dir., Arthur C. Butler, 966 National Press Bldg., Wash., D. C.

May 11-14—Chicago, Ill.
UNITED STATES CONFERENCE OF MAYORS. Annual Meeting (The Conrad Hilton). Exec. Dir., Mr. Harry R. Betters, 1707 H Street N.W., Wash. 6, D. C.

May 15-20—Bal Harbour, Fla.
AMERICAN WATER WORKS ASSOCIATION. Annual Convention (Americana Hotel). Exec. Sec., Raymond J. Faust, 2 Park Ave., New York, N. Y.

***May 16-19—St. Paul, Minn.**
NATIONAL INSTITUTE OF MUNICIPAL CLERKS. Annual Meeting (Lowry Hotel). Sec., Arthur J. Shinners, Town Hall, Brookline, Mass.

***May 16-19—New York, N. Y.**
MUNICIPAL FINANCE OFFICERS ASSOC. OF THE U. S. AND CANADA. Annual Meeting (Statler Hilton Hotel). Exec. Dir., Joseph F. Clark, 1313 E. 60th St., Chicago 37, Ill.

May 16-20—Montreal, Canada
NATIONAL FIRE PROTECTION ASSOC. Annual Meeting (Queen Elizabeth Hotel). Gen. Mgr., Percy Bugbee, 60 Batterymarch St., Boston, Mass.

May 22-26—Cincinnati, Ohio
AIR POLLUTION CONTROL ASSOCIATION. Annual Meeting (Netherland-Hilton). Exec. Sec., Arnold Arch, 4400 Fifth Ave., Pittsburgh 13, Pa.

May 22-26—Bal Harbour, Fla.
AMERICAN SOCIETY OF PLANNING OFFICIALS. Annual Conference (Americana Hotel) Exec. Dir., Dennis O'Harrow, 1313 E. 60th St., Chicago 37, Ill.

May 24-27—Washington, D. C.
NATIONAL RIVERS & HARBORS CONGRESS. 47th National Convention (Mayflower Hotel). Exec. Vice-Pres., William H. Webb, Suite 523-A, La Salle Bldg., 1028 Connecticut Ave. N.W., Washington 6, D. C.

May 28-June 3—San Juan, Puerto Rico
INTERNATIONAL FEDERATION FOR HOUSING & PLANNING and INTER-AMERICAN PLANNING SOCIETY. Joint World Congress (University of Puerto Rico). Sec.-Gen., Humberto Espinosa, P. O. Box 1729, San Juan, Puerto Rico.

***July 18-22—San Francisco, Calif.**
NATIONAL ASSOCIATION OF SANITARIANS. Annual Meeting (Jack Tar Hotel). Sec., Nicholas Pohlit, c/o Univ. of Denver, Denver 10, Colo.

Aug. 14-17—New York, N. Y.
AMERICAN PUBLIC WORKS ASSOC. Annual Convention (Manhattan Hotel and New York Coliseum). Exec. Dir., Robert D. Bugher, 1313 E. 60 St., Chicago 37, Ill.

Oct. 2-6—Philadelphia, Pa.
FEDERATION OF SEWAGE AND INDUSTRIAL WASTES ASSOCIATIONS. Annual Meeting (The Trade & Convention Center). Exec. Sec., Ralph E. Fuhrman, 4435 Wisconsin Ave. N.W., Washington 16, D. C.

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MUNICIPAL AND CIVIC PUBLICATIONS

Publication on these pages are available from the addresses indicated and are usually free unless a price is given.

The City One Doesn't See

THE WORLD BENEATH THE CITY—*By Robert Daley. J. B. Lippincott Co., East Washington Square, Philadelphia, Pa.* 1960. 223 *pp.* $3.95.

Those who place pipe, conduits and wires beneath the city streets should make the author of this fascinating volume honorary member of their various professional associations. In a delightful, story-telling style, he has chronicled the tales about New York's sub-street arteries that could be repeated in almost any city.

He tells how resourceful water-works engineering rescued New York from perishing in its own filth; of the dismal complications by Aaron Burr, who founded a water company to establish a bank—still in operation—and in doing so, made the task of providing good water for New Yorkers measurably harder; of Charles Harvey, a forgotten pioneer of New York's rapid-transit system; of sand hogs blown up through the river during subway construction; of Teddy May, who has worked in the sewers for half a century; of Mayor Grant who, when the electric and telephone utilities made the city streets a cobweb of wires, chopped the offending poles down; of alligators, rats and hobo jungles under the streets.

This book will make every city official chuckle because New York's problems are those of every city, differing only in intensity.

Water Rates

WATER RATES AND RELATED DATA IN MICHIGAN MUNICIPALITIES OVER 5,000 POPULATION, *Information Bulletin* #89. 1959. 60 *pp.* $3.50. *And* WATER RATES AND RELATED DATA IN MICHIGAN MUNICIPALITIES UNDER 5,000 POPULATION, *Information Bulletin* #90. 1959. 42 *pp.* $3.50. *Michigan Municipal League, 205 South State St., Ann Arbor, Mich.*

Information Bulletin No. 90 and Information Bulletin No. 89 present the water rate practices of 152 Michigan cities and villages. The previous publication on this subject was published in 1949. Extensive demands from municipal officials for comparable water rate data and other information about water services necessitated a complete and extensive revision. Bulletin No. 90 has data on 66 cities and villages; No. 89 has data on 86 municipalities.

Troublesome Special Districts

SPECIAL DISTRICTS AND AUTHORITIES IN TEXAS—*By Woodworth G. Thrombley. The Institute of Public Affairs, University of Texas, Austin, Tex.* 1959. 142 *pp.* $2.50.

Those special *ad hoc* districts, authorities, autonomous commissions, hybrid organizations to some extent neither public nor private, and yet both public and private, often have been considered the special annoyance of highly-built-up metropolitan areas. This book shows that Texas has them too—and plenty.

While the authors try to be objective and list the advantages, such as straddling unrealistic political boundaries and circumventing archaic state-imposed debt limits, they sharply make these pertinent criticisms:

- They tend to disintegrate coordinated governmental functions.
- They are undemocratic in character.
- They are uneconomical in operation.

Personnel Administration

PERSONNEL MANAGEMENT IN SMALL COMPANIES—*By Frances Torbert. Institute of Industrial Relations,* 100 *BAE Bldg., University of California, Los Angeles* 24, *Calif.* 1959. 102 *pp.* 50 *cents.*

This little book is designed primarily for small businesses. Nevertheless it has a lot of good ideas for the municipal administrator, particularly in the smaller communities. Advice on how to select new employees is particularly helpful.

Government in Transition

METROPOLITAN GOVERNMENT — *Legislative Research Commission, Commonwealth of Kentucky, Frankfort, Ky.* 1959. 95 *pp.*

A good thought-provoking study of local government during this period of booming urban growth. The essence is clear that regional government is not a simple package, easily ordered out of stock. The study analyzes metropolitan complexes, not only in Kentucky, but also Cleveland, St. Louis, Nashville, Knoxville, and Miami.

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Fire Protection Standards

NATIONAL FIRE CODES, 1959. *National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass. Six volumes—177 separate standards, 5280 pages, $7 per volume, $35 for six.*

Important changes in fire safety standards are incorporated in a revised edition of the National Fire Codes. The six-volume 1959 edition is a compilation of the 177 standards developed by National Fire Protection Association in the fields of flammable liquids and gases (Vol. 1); combustible solids, dusts, chemicals and explosives (Vol. 2); building construction and equipment (Vol. 3); extinguishing equipment (Vol. 4); electrical installations (Vol. 5); and transportation (Vol. 6).

The codes are offered as a suggested basis for safety to life and property from fire without causing undue inconvenience and expense. Purely advisory so far as the National Fire Protection Association is concerned, they are used widely in the United States, Canada and abroad by property owners, legal and insurance interests, and others responsible for the field of fire safety.

The Small Group

THE SMALL GROUP—*By Michael S. Olmsted. Random House, Inc., 457 Madison Ave., New York, N. Y.* 1959. 159 *pp.* $1.35.

An inexpensive little book on group behaviour. Although some of it gets to be uncomfortably heavy reading, nevertheless it has much value to the local official. Democratic, urban society operates in small groups and the author gives an idea of how they function. Although the author doesn't say so directly, his text explains why people in metropolitan areas prefer to gather into small political subdivisions rather than pool their energies in one over-all metropolitan complex. The book gives guidance on the structure of the small group, how to guide it and get the most out of it, and how to be a part of it most effectively.

For Orderly Community Growth

COMMUNITY FACILITIES—A LIST OF SELECTED REFERENCES — BIBLIOGRAPHY SERIES #4.—*Prepared by the National Housing Center Library. National Association of Home Builders, 1625 L Street N.W., Washington 6, D. C.* 1959. 170 *pp.*

A good collection of references for community growth. The authors make convenient divisions of the bibliography into: community growth; intergovernmental relations; planning; financing; schools; water; sewerage; air and water pollution; streets; traffic; recreation; zoning; subdivision control; refuse collection and a few others.

Economics and Local Government

ECONOMIC REASONING—*The Brookings Institution, 722 Jackson Place, Washington 6, D. C.* 1959. 335 *pp.* $3.

A good book to have read before the local high school or college economics professor drops around for an argument. It discusses not only economics generally, but also the effect of governmental spending on national economy, and in particular, local government. It explains the value of debt when incurred for valuable capital investments. The reading gets heavy when the authors try to explain the Federal Reserve System. But otherwise, it has merit, particularly at a time when economics have become so significant to the well-being of local government.

Non-White Housing

URBAN RENEWAL AND THE NEGRO IN CHICAGO—*The Chicago Urban League Community Services Department, 2410 South Michigan Avenue, Chicago 16, Ill.* 1958. 30 *pp.*

Some will be surprised to learn that the most segregated major city in the nation is not in the South, but is Chicago. This report outlines corrective measures.

ADMINISTRATION & GOVERNMENT

GENERAL—Proceedings of Eighteenth Annual Conference of the Western Governmental Research Association. Office of the Secretariat, 346 Library Annex, University of California, Berkeley, Calif. 80 pp. 1959. $1.

CALIFORNIA—Functional Consolidation of Local Government. Final Report of the Assembly Interim Committee on Municipal and County Government. Office of the Chief Clerk, California State Assembly, State Capitol, Sacramento, Calif. 1959. 22 pp.

FINANCE & TAXATION

HARRIS COUNTY, TEX.—Survey of Finances of Municipalities in Harris County, 1958 Fiscal Year. Tax Research Association, 818 Continental Bank Building, Houston 2, Tex. 1959. 16 pp.

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HEALTH & WELFARE

DETROIT, MICH.—The Detroit Medical Center. The Detroit Medical Center Citizens' Committee, 3825 Brush St., Detroit 1, Mich. 1958. 23 pp.

MISCELLANEOUS

GENERAL—1960 Directory of Shopping Centers. National Research Bureau, Inc., 415 N. Dearborn St., Chicago 10, Ill. 1959. 351 pp. Single copy $25.

KITIMAT, CANADA—Kitimat: The First Five Years. Kitimat Chamber of Commerce, Box 1021, Kitimat, British Columbia, Canada. 1959. 40 pp. 50 cents.

PARKS & PLAYGROUNDS

BUCKS COUNTY, PA.—A Report to All Who Make Bucks County Their Home. Bucks County Park Board, 50 North Main Street, Doylestown, Pa. 1959. 30 pp. 25 cents.

LOS ANGELES, CALIF.—Department of Parks and Recreation Annual Report 1958-59. Department of Parks and Recreation, 834 W. Olympic Boulevard, Los Angeles 15, Calif. 1959. 15 pp.

PLANNING, ZONING & HOUSING

FLAGSTAFF, ARIZ.—Flagstaff, Arizona, Planning for the Future. Bureau of Business and Public Research, College of Business and Public Administration, University of Arizona, Tucson, Ariz. 1959. 10 pp.

NEWARK, N. J.—A Study of the Downtown Area. Newark Economic Development Committee, 605 Broad St., Newark 2, N. J. 1959. 65 pp.

PITTSBURGH, PA.—Action to Achieve the Potentials for Housing in the Pittsburgh Area. Action Research Program, 17 Dunster St., Cambridge 38, Mass. 1959. 21 pp. $1.

TULSA, OKLA.—1975 Metropolitan Tulsa Preliminary Land Use Plan. Tulsa Metropolitan Area Planning Commission, 406 South Denver, Tulsa 2, Okla. 1959.

PUBLIC SAFETY

MILLBURN, N. J.—The Millburn, New Jersey, Police Department Survey. The New York Institute of Criminology, 115-117 West 42nd St., New York, N. Y. 1959. 39 pp.

PHILADELPHIA, PA.—Philadelphia's Finest. Division of Public Information, Office of the City Representative, City Hall, Philadelphia 7, Pa. 1959. 20 pp.

REFUSE

SAVANNAH, GA.—Composting of Organic Wastes—An Annotated Bibliography. John S. Wiley, Sanitary Engineer Director, U. S. Department of Health, Technical Development Laboratories, Savannah, Ga. 1959. 65 pp.

TRANSPORTATION

PHILADELPHIA, PA.—Transportation in the Philadelphia Metropolitan Region. By John A. Bailey, Urban Traffic and Transportation Board, Market St. National Bank Bldg., Philadelphia 7, Pa. 1959. 21 pp.

MADISON, WIS.—Mass Transit Report. Planning Commission, City-County Bldg., Madison 9, Wis. 1959. 99 pp.

URBAN RENEWAL

BALTIMORE, MD.—The Displacement of Small Businesses From a Slum Clearance Area. Baltimore Urban Renewal and Housing Agency, 709 East Eager St., Baltimore 3, Md. 1959. 7 pp.

CHICAGO, ILL.—Analysis of the Feasibility of Rehabilitation of Residential Structures in the Hyde Park-Kenwood Renewal Area. Community Conservation Board of Chicago, Room 506, 320 North Clark Street, Chicago 10, Ill. 1959. 43 pp.

COLUMBIA, MISS.—A Plan of Action for the Douglass School Urban Renewal Project. Office of the City Manager, City Hall, Columbia, Miss. 1959. 10 pp.

DISTRICT OF COLUMBIA—Progress Report of the Urban Renewal Workable Program for the District of Columbia. Prepared by the Office of Urban Renewal, Government of the District of Columbia, Washington 4, D. C. 1959. 24 pp.

MARIETTA, GA.—Suburban Analysis Study (revised to May 1959) Citizens' Advisory Commission, City Hall, Marietta, Ga. 1959. 55 pp.

MOUNT CLEMENS, MICH.—A Program for Progress. City of Mount Clemens Redevelopment Department, 169 North Walnut, Mt. Clemens, Mich. 1959. 20 pp.

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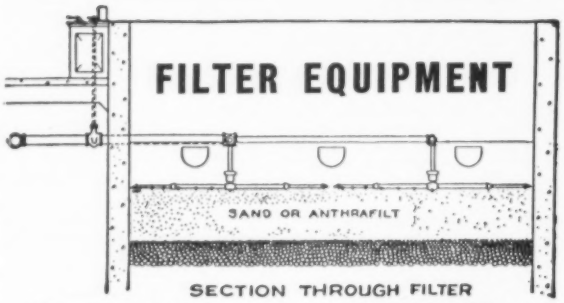

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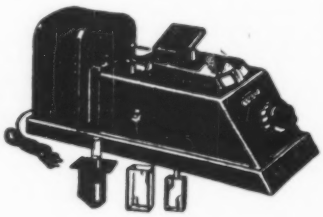

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MILWAUKEE, WIS.—Recertification of Workable Program for Urban Renewal. By Sol Ackerman. Office of Industrial Development Coordinator, City Hall, Milwaukee, Wis. 1959. 31 pp.

WATER

CONTRA COSTA COUNTY, CALIF.—Contra Costa County's Water Requirements. Contra Costa County Water Agency, Martinez, Calif. 1959. 12 pp.

REPRESENTATIVE MUNICIPAL BOND ISSUES

From November 3rd to December 1st, 1959

Date of Issue	*Locality*	*Amount in $1000*	*Purpose*	*Term Yrs. to Maturity*	*Rate of Int.*	*Yield %*
11/ 3/59	Garland, Texas	1,900	General Obligation	17½	4.10	4.01
11/ 4/59	Atlanta, Ga.	8,335	Airport, Urban Renewal	16½	3.25	3.36
11/ 5/59	Columbia City, Ind.	800	Sewage Works Revenue	20	4.35	4.34
11/ 9/59	Rochester, N. Y.	3,981	Capital, Bond Anticipation	1	..	2.62
11/10/59	Detroit, Mich.	10,000	Tax Anticipation	⅝	..	2.87
11/12/59	Indianapolis, Ind., Sanitary Dist.	2,760	Sewerage	17½	3.5	3.47
11/16/59	Tacoma, Wash.	3,000	Sewer Revenue	15	3.5	3.92
11/17/59	Boston, Mass.	500	Sewerage Loan	10½	3.75	3.83
11/17/59	Clay, N. Y.	701	Public Improvement	14½	4	3.99
11/18/59	Chicago, Ill.	1,950	Sewer	11½	3.63	3.67
11/19/59	Indianapolis Redevelopment Dist., Ind.	2,730	Redevelopment	13½	3.25	3.25
11/19/59	New Castle Co., Del.	190	Suburban Community Improvement	10	3.75	3.68
11/19/59	Philadelphia, Pa.	24,780	General Obligation	15	4	3.71
11/24/59	Fort Wayne, Ind.	2,600	Sewer Revenue	11½	3.90	3.86
11/24/59	Greenwood, S. C.	1,800	Public Utility Rev.	17½	3.90	3.89
11/24/59	New York City	50,000	Tax Anticipation	5/12	..	3.00
11/24/59	Portsmouth, Va.	6,800	General Obligation	12½	3.75	3.74
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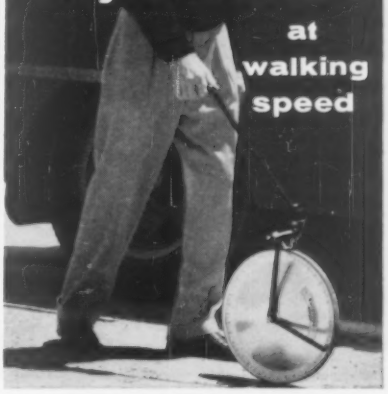

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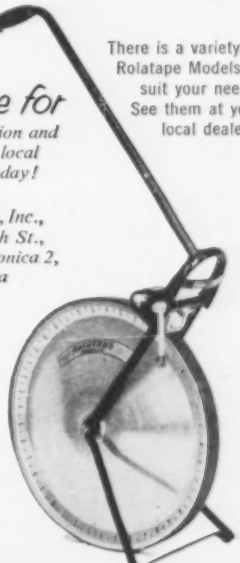

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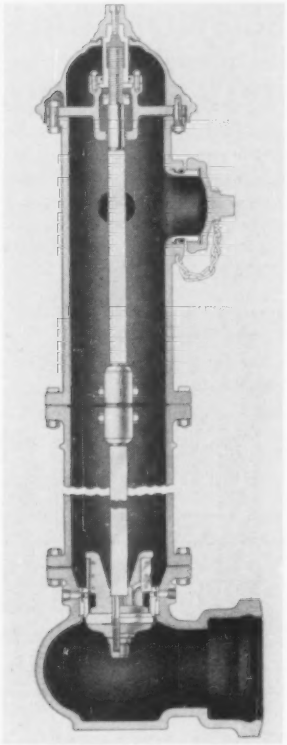
A. P. Smith Offers New Hydrant



This is a cross section of the Model H100 fire hydrant, which has been added to the extensive line of A. P. Smith products. It features bronze-to-bronze seat ring threads, permanent lubrication and a seat removal wrench of unusual design.

Model H100 conforms to current American Water Works Association specifications and is produced with 4⅝″ and 5¼″ internal valve openings for working pressures up to 150 pounds. When equipped with a high pressure pilot valve, the hydrant is suitable for working pressures up to 200 pounds.

A 20-page illustrated bulletin gives details. For a copy, write THE A. P. SMITH MFG. CO., EAST ORANGE, N. J., or use the Post Card on Page 52. Circle No. 776.

Corporation Name Change

Southern Signals, Inc., manufacturer of a full line of traffic controls, including signal controls for isolated, interconnected, remote, vehicle or pedestrian actuated application; fixed face and adjustable signal heads; beacons and flasher controls, has changed its name to Traffic Signals, Inc.

This announcement was made jointly by E. J. Schulenburg, president, and J. F. Williamson, Jr., manager, who, in conjunction with municipal and state officials, is conducting seminars in traffic engineering. For information on these seminars, literature or specific traffic control problems, write to TRAFFIC SIGNALS, INC., 222 BEACH ST., P. O. Box 1303, SHREVEPORT, LA.

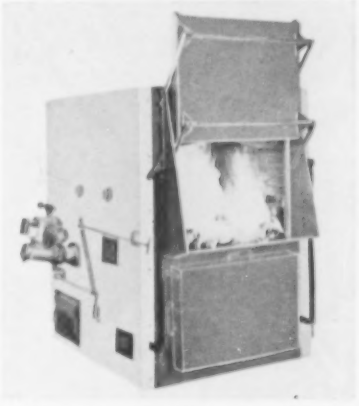
Morse Boulger's New Incinerator

Morse Boulger, Inc., has introduced a new incinerator—the CT destructor—and has engineered it to bring new features in incineration at a new low price.

Two of these new features are (1) a dump-and-shaker lever for easy removal of fly ash without constant bending and shoveling and (2) a swing-a-way charging door which keeps the hot face of the door away from the operator and operation. It is controlled by heavy-duty springs.

The CT destructor utilizes heavy gauge outer shell, heavy duty high heat firebrick lining backed with newly developed insulation. It is only 3′8″ wide and needs only 4′ for cleaning and stoking.

According to the United States Testing Co., Inc. Report No. 62294 (dated November 13, 1959), Model 1-CT was tested and verified for capacity of 125 pounds per hour of Type I waste containing 7 to 20% moisture, soundness of engineering design, and met the Incinerator Institute of America's Incinerator Standards (dated April 1958) smoke and fly ash requirements.



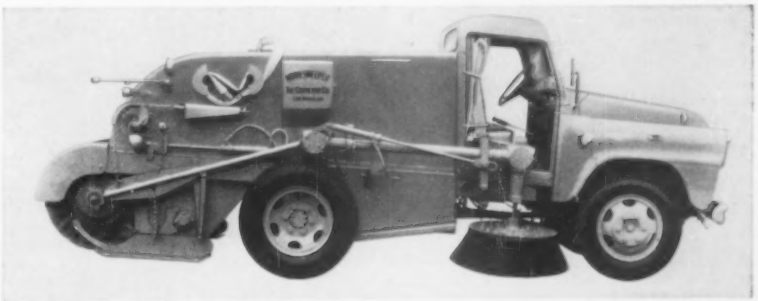
The CT Destructor

For additional information, write MORSE BOUGLER, INC., 80 FIFTH AVE., NEW YORK 11, N. Y., or use the Post Card on Page 52. Circle No. 771.

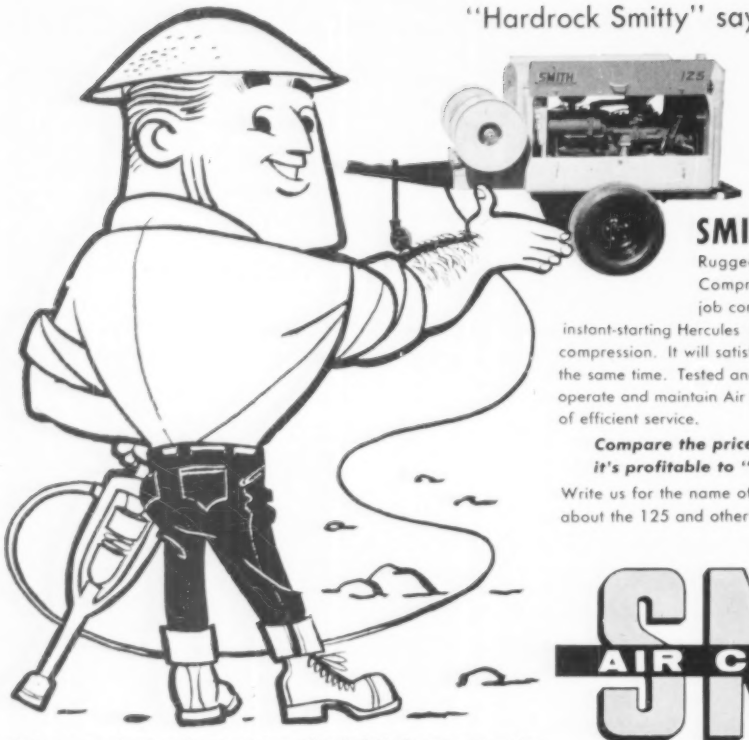
New Model Mobil Sweeper

With a separate rear engine to drive the sweeping mechanism, brooms of the new Model TE Mobil Sweeper can operate at maximum efficiency at all times completely independent of the vehicle's forward speed. Consequently there is no loss of efficiency when the sweeper reduces speed for traffic, intersections, rounding parked cars, curves or hills. And debris at the curb line can be picked up at one pass.

"Automatic full floating" for both rear pick-up broom and gutter brooms means that once the operator makes the original spring ten-



Independent broom power enables the operator of the Model TE to concentrate more thoroughly on sweeping, since extra clutching, shifting and adjustment of engine speeds normal with power take-off operation are eliminated.



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- ECONOMICALLY

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Rugged construction, smooth performance . . . in an Air Compressor designed to stand up under the "toughest" job conditions. The SMITH 125 operates on a 6-cylinder, instant-starting Hercules Industrial engine—using 3 cylinders for power, 3 for compression. It will satisfactorily operate two 85-pound paving breakers at the same time. Tested and proved to be the most dependable, inexpensive to operate and maintain Air Compressor available, the SMITH 125 will give years of efficient service.

Compare the price . . . compare the job results—you'll find it's profitable to "GO SMITH" with "Hardrock Smitty"

Write us for the name of your nearest dealer and for complete information about the 125 and other models, portable and stationary.

Ask your dealer for an "on the job" demonstration.

SMITH AIR COMPRESSORS

GORDON SMITH & COMPANY, INC., 425 College St., Bowling Green, Ky.

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sion adjustment for the "touch" of the bristles to the pavement, up and down motion to follow the contour of the pavement surface is done automatically. Thus dips, intersections, inverted curbs and other irregularities are swept clean.

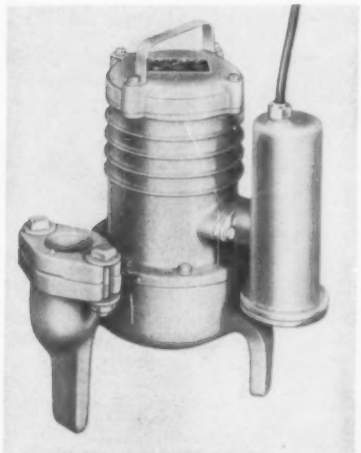
The twin-engine Model TE is built on the same length chassis as previous Mobil Sweeper models and retains the same short turn maneuverability, 4-wheel hydraulic brakes and other safety features. Its dirt hopper has a capacity of 3 1/5 yards. Tests are said to show the Model TE capable of picking up bigger loads more quickly, sweeping cleaner, and covering more curb miles per day. One user is said to report as much as 50% greater sweeping coverage in a single day.

For additional information, write Mobil Sweeper Division, Conveyor Co., 3260 E. Slauson Ave., Los Angeles 58, Calif., or use the Post Card on Page 52. Circle No. 783.

Low-Priced Submersible Sewage Ejector

This quiet operating pump, designed for residential installation, permits the installation of basement toilets and other fixtures where waste must be pumped up to outside sewer lines.

The automatic Micro Switch Control which plugs into the pump unit provides the proper pumping cycle for residential use without any adjustment. The motor is a ½-hp capacitor type with overload protection and factory lubricated ball bearings which require no further attention. A standard ground plug makes the electrical connection.



This pump is recommended for dosing chamber of septic tanks, drainage systems and other waste disposal.

A high efficiency non-clog impeller handles solids up to 1½" diameter. Capacity of the unit is 75 gpm at 15-foot head; 50 gpm at 20-foot head. The unit is easily installed in a basin of 24" I.D. or more; the basin can be sealed for gas-tight installation. Bulletin SE 850 gives full details. It can be obtained by writing to The Weil Pump Co., 1530 N. Fremont St., Chicago 22, Ill., or by using the Post Card on Page 52. Circle No. 766.

Latest Teletype

New Teletype Automatic Send-Receive Set operates at 100 words per minute, provides facilities for: tape punching; tape transmission;

Glass Covers
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ESSICK
VIBRATING COMPACTORS

ESSICK VR-28-W PATCHING ASPHALT IN GARDEN GROVE, CALIF.

"MAINTENANCE PRODUCTION TRIPLED... ...COSTS DECREASED 80%"

SEWARD H. DART, STREET MAINTENANCE SUPERINTENDENT-SHOWN WATCHING HIS 28" ESSICK VIBRATING COMPACTOR IN ACTION—STATES:

"Irrigation water tracked into the intersections and gutter aprons in Garden Grove, constantly eroded the asphalt and made maintenance a full time problem. As a result, our gutter and intersection patching required frequent reworking, and our costs were high.

"After a demonstration of the 28" Essick Vibrating Compactor, we knew we had found the answer. It was self-propelled, hooked on the tail gate of a dump truck, and produced compaction equivalent to an 8 ton roller on asphalt. Its high frequency vibration compacts an asphalt patch that is completely dense—that can be opened immediately to traffic without any marking or damage to the asphalt.

"Now with our patching unit consisting of the 1½ ton dump truck, an Essick 120 gallon Truck Mounted Emulsion Unit, a propane torch, and the Essick VR-28-W Vibrating Compactor, the patch life has been tremendously extended, our maintenance production has tripled, and our costs have decreased 80%.

"The Essick VR-28 really solved the patch problem for us."

SELF PROPELLED — MANEUVERABLE — PORTABLE

Essick High Frequency Vibrating Compactors are constantly exceeding the densities and specifications performed by other compaction methods, while creating new standards of compaction for all types of fills, sub base, base materials, and asphalt.

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9 Models of Vibrating Compactors from 13" to 72" Widths

Also 14 models of Tandem Rollers from ½ to 14 Tons

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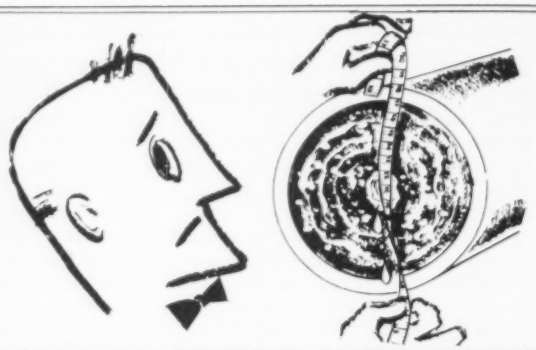
Affiliated with THE T. L. SMITH COMPANY, Milwaukee, Wisconsin



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tape reception, sending and receiving page copy on message paper or multipart business forms; tape as a by-product of both transmission and reception, plus providing a built-in control system for remote apparatus.

The teletype system has been used by police departments for 30 years for interregional communication. Murders, robberies, burglaries and escapes are alarms usually broadcast by teletype. It is a typewritten source transmitting printed message over telephone wires from a sending teletypewriter machine to one on a group of receiving teletype sets.

For additional information, contact TELETYPE CORP., 4100 FULLERTON, CHICAGO 39, ILL., or use the Post Card on Page 52. Circle No. 764.

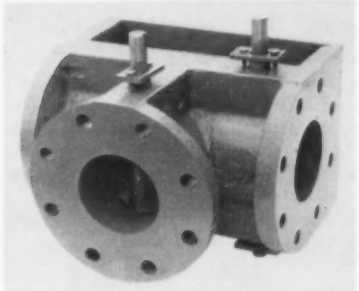
Two Butterfly Valves and a Flanged "T" Connection

The 2-in-1 Triangle valve recently introduced by U. S. Valve & Engineering Co. of Houston, Texas, is designed to give perfect flow control in cooling systems and in other applications where two streams flow to or from a single pipe.

It is said to fit piping arrangements with ease, and to require no awkward alignment or adjustment. Shaft packing may be removed from either end of the through shaft, inspected, replaced or adjusted without removing valve.

The Triangle valve is constructed of corrosion-resistant materials and comes with either metal-seated or positive - sealing, Neoprene - seated valves. It is available in sizes 1" through 12".

For additional information, write U. S. VALVE & ENGINEERING CO., P. O. Box 14015, HOUSTON, TEXAS, or use the Post Card on Page 52. Circle No. 799.

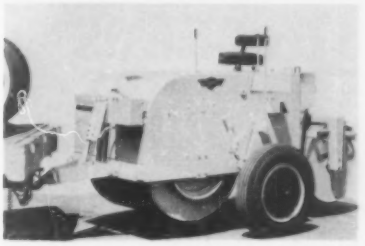


The single unit, U. S. Triangle valve contains two non-thrust vibration-proof butterfly valves in a flanged "T" body.

New Roller Has Self-Trailing Wheels

Model 650-C, a 4½- to 6½-ton tandem roller new to the Essick line, features hydraulic operation of self-trailing wheels, for maximum portability. During rolling operations, the travel wheels retract upward to a high position; for the few instances where close wall clearances are necessary, the travel wheels can be quickly removed.

Finger-tip manipulation of two



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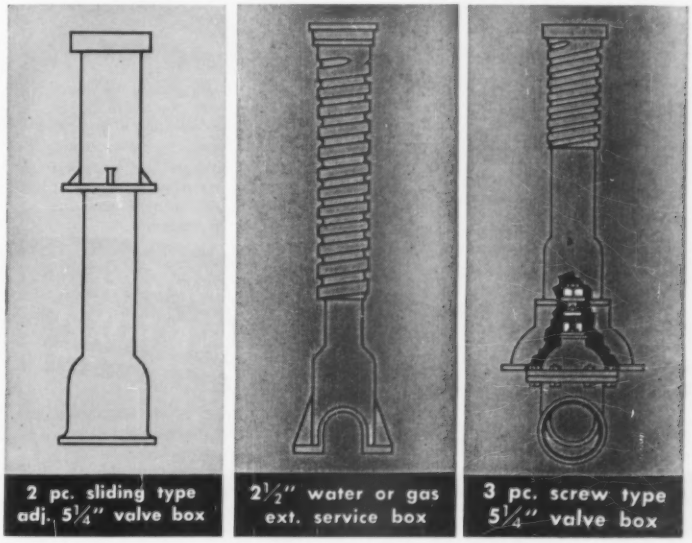
are available in every size and style!

No matter what size, shape or style municipal casting you may desire—you're practically sure to find a "Buffalo" casting to serve your needs. Or, where desired, castings may be made to your own specifications. Whether you need valve, service or roadway boxes, meter boxes, manhole rings and covers or other municipal castings, you'll find all "Buffalo" castings designed for service and dependability.



Prompt quotations given on all your standard or special gray iron or non-ferrous castings.

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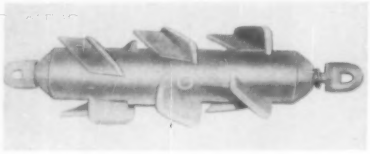
individual valves control the power to operate the trailing mechanism. Valves are located at the front of the roller where all movement can be seen by the operator. One valve controls adjustment of the height of the towing hitch, while the other valve swings the wheels under the roller and smoothly raises it to towing position.

The Model 650-C has dual controls accessible from either of the two seat positions, with hydraulic steering lever located between seat positions; a Continental 4-cylinder line, 32-hp water-cooled engine; compression roll which produces 228 pounds per lineal inch compression with water ballast.

For additional information, write ESSICK MANUFACTURING CO., 1950 SANTA FE AVE., LOS ANGELES 21, CALIF., or use the Post Card on Page 52. Circle No. 777.

Self-Rotating Sewer Cleaning Tool



Engineered and developed by an experienced sewer-dragging crew member, the Root Hog removes roots by double action—forward for cutting, reverse for dragging out roots. It plows up sediments and stretches the life of drag buckets, breaks up debris deposits, cuts sewer cleaning time.

The manufacturer reports that it operates perfectly without the need for troublesome gouges or spined tools and that its specially designed cutters will not injure the pipe wall. Other features include a swiveled draw bar or tool steel for extra strength and threaded ballast plug for weight control. Hardened cutters are available as optional extras.

The new Root Hog comes in stock sizes for 8″ through 18″ round

TWO PIECE
sliding or screw type cast iron valve boxes for covering 4" thru 10" valves for water or gas. Rugged construction for lifetime service. 5¼" shaft. Extensions as required.
Adjustable
VALVE BOXES
THREE PIECE
valve boxes supplied with separate bases are available in sliding or screw type. Made with 5¼" and 7" shafts with extensions as required. Complete line of service and roadway boxes.
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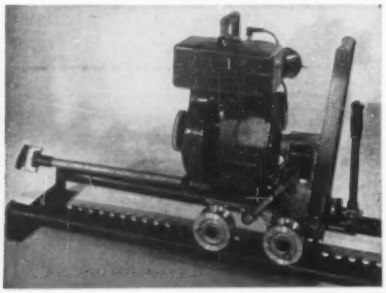

Model 70

- **BORES**—with no surface break
- **BORES**—up to 250 feet in length
- **BORES**—up to six inches diameter
- **BORES**—so drill stem of pipe of conduit stays
- **BORES**—1,000 feet on 1 Gal. of gas
- **REAMS**—up to 12 inches diameter

Write immediately for information.

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sewer pipe. Other sizes and models for curved pipe are available on special order. For complete information, write THE JUSWELL CO., 1266 ACTON RD., COLUMBUS 24, OHIO, for literature, or use the Post Card on Page 52. Circle No. 781.

Casts Conrete Pipe Directly in Trench At 15% Savings

Engineers from local, state and federal government agencies in northern California and from private industry recently saw Monolithic Pipe Lines, Inc. of Palo Alto, Calif. demonstrate a machine that casts concrete pipe directly in the trench at savings in cost said to average 15%. The demonstration was at the construction site of 8,000 feet of storm drainage pipe for the City of Sunnyvale.

The machine, a development of No-Joint Concrete Pipe Co. of Yuba City, Calif., is essentially a round-bottomed "boat" and in operation is lowered into the trench which is dug to conform to the outside diameter of pipe. Ready-mixed concrete is poured into a hopper as the machine moves forward in the trench extruding the formed pipe in its "wake." Power for winching forward and for vibration and compaction of the concrete as it is pressed through to form the pipe is provided by a gasoline motor mounted at the front of the machine.

During construction the upper half of the pipe is supported by sectional aluminum forms, placed as the machine moves along; the trench itself forms the lower half. The aluminum sections are removed and made ready for re-use after initial set of the concrete.

Demonstration tests were made on a 3-day-old section of pipe with a 23-ton bull dozer running back and forth over the filled trench. In succeeding runs more of the protecting layer of dirt was removed and the pipe was subjected to the sharp blows of the dozer blade. With only a 3″ layer of dirt remaining, the pipe was found to be intact.

Pipe sizes range from 24″ to 6′ in diameter. Depending upon diameter required, the weights of the No-Joint machines vary from 2 to 5 tons. Depending on size, the pipe

A labor-saving No-Joint Concrete Pipe machine is shown constructing a 48″ storm drain.

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for every digging and rehandling need!

STANDARD ORANGE PEEL for sand, gravel, loam, etc.
HEAVY ORANGE PEEL for excavating, dredging and general contracting work.
MULTI-POWER ORANGE PEEL for hard, compact materials such as clay, gumbo, sand, etc.
THREE BLADE ORANGE PEEL with reinforced backs for rocks, stumps, piling, etc.

Plus Dwarf and Catch-Basin Buckets

Write for illustrated bulletin giving full details including weights and dimensions.

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Builders of Better Buckets Since 1888

GOOD ROADS "CHAMPION" SNOW PLOWS

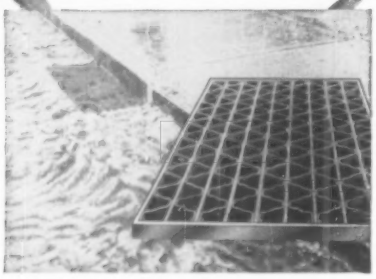
REVERSIBLE • ONE-WAY • V-PLOWS • RIGID PLOWS

Good Roads Snow Plows perform smoothly and efficiently under the most adverse snow removal conditions. These rugged, heavy-duty plows are engineered to provide safe, speedy snow removal on highways, roads, streets, parking lots and airports. Model 100 Reversible and 700 One-Way Plows are equipped with the exclusive Good Roads spring-cushioned, safety-blade trip device with automatic return for safe plowing at high speeds, protecting men and equipment. Model 150 and 750 Series Plows have basic open-type trip spring.

For further information on models available, write:

Good Roads MACHINERY — **GOOD ROADS MACHINERY Corp.**
MINERVA, OHIO

FLOODED HIGHWAYS HINDER TRAFFIC

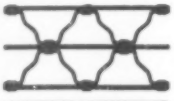


OLD heavy cast iron draingrates, averaging at best 40% clear opening, often fail to carry off rain water fast enough during heavy downpours, resulting in flooded highways—particularly at underpasses. Also, cracked draingrates must be replaced.

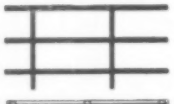
With open steel mesh draingrates, larger clear openings reduce the likelihood of flooded highways considerably. Irving "Dryway" Draingrates are 75% open for greater drainage and are made of steel bars on edge, not subject to cracking.

Available in three basic designs:

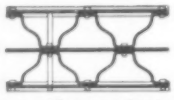
Riveted



Pressure-Locked



RI-6



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Self-maintaining, Lightweight, Economical, Safe

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Purchasing News

can be cast in place at speeds up to 120 feet per hour.

Engineering advantages claimed by Monolithic representatives and No-Joint officials can be summed up as "less cost for a better product." Because there are no joints, all longitudinal stresses are spread evenly along the length of conduit; casting the pipe in place creates an intimate bond with the ditch wall, resulting in better load carrying capacity due to ideal bedding.

The economic advantages are said to result from both lower initial cost and lower maintenance cost. Installation costs are reduced because less excavation and backfill is needed, rapid rate of production requires less manpower and less equipment, material transportation and storage costs are reduced, and narrower trenches reduce rights-of-way costs and resurfacing.

Advantages are reported to be particularly notable for sewer work because the pipe contains no interior joints or groutings to catch and hold solids. For additional information, write NO-JOINT CONCRETE PIPE CO., YUBA CITY, CALIF., or use the Post Card on Page 52. Circle No. 784.

Appointments At Eimco

W. L. Dowdey *P. O. Richter*

Wayne L. Dowdey, formerly manager of the Southern District of The Eimco Corp., has been appointed general manager for the corporation. He will be responsible for all domestic sales of the corporation's various divisions. And Paul O. Richter, Eimco vice president with 24 years' experience with the company's sales organization, has been named general manager of the Filter Division.

In announcing these top management appointments, Joseph Rosenblatt, Eimco president, said:

"We consider ourselves very fortunate to have men of Paul Richter and Wayne Dowdey's calibre in the organization and are happy when

Red Flint

FILTER SANDS

UNDERDRAIN

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SHIPMENTS MADE BULK or BAGS—ANY QUANTITY

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we can give larger scope to such men from within our own organization. Our aim is, as always, better service to the buyers and users of Eimco equipment and machines. Wayne Dowdey's many years of experience with our company and abilities not only fully qualify him, but make him the logical choice for the important position of general sales manager.

"Paul Richter, Eimco vice president, can give larger scope to his great experience and knowledge in his new post as general manager of our Filter Division, one of our fast-growing divisions with vast potentials for even greater service to the water and waste treatment and general industrial fields."

Nichols to Sell Sludge Concentrator

The acquisition by Nichols Engineering and Research Corp., 70 Pine St., New York City, of the exclusive manufacturing and sales rights in the United States of the Equipment Development Company's "Roto Plug" sludge concentrator, has been announced by Mark B. Owen, Nichols vice president.

This method of dewatering sewage sludge requires no chemicals, uses lower power, is continuous and automatic.

G-E Promotes

C. J. Meloun

Charles J. Meloun has been appointed manager of marketing for General Electric's Outdoor Lighting Department, Hendersonville, N. C., according to word from J. S. Smith, department general manager.

Mr. Meloun began his career with General Electric in 1942 following graduation from Case Institute of Technology where he received a B.S. degree in electrical engineering. His assignments in the service engineering, design engineering and application engineering sections of the company have given him broad experience in many phases of the company's business. Most recently he has been serving as manager of engineering for the Outdoor Lighting Department.

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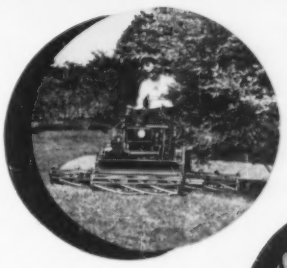
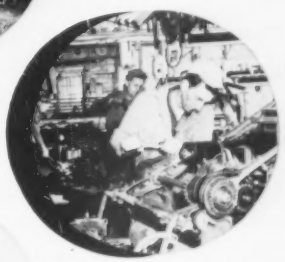
...is your mower?
invest in a Locke and save!
COMPARE:



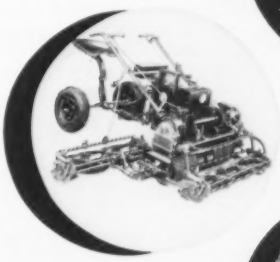
● MANEUVERABILITY

A LOCKE turns at any angle. Overhangs raised borders by 1/3. Cuts trimming time in half; leaves no streaks, rolled or uncut grass. Does yours?



● SERVICE

LOCKES are sold and serviced only by specialists, averaging 23 years in business. They must meet our code of ethics. Who services yours?



● LONG TERM EQUIPMENT

A LOCKE'S life expectancy is 3000-4000 hrs. (14 to 19 yrs.) What's yours?

● DEPRECIATION

A LOCKE'S dollar depreciation averages 57% in 10-19 yrs. (Others: 69% in 10-14 yrs.) What's yours worth today...10 years hence?

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Gentlemen: We are most certainly interested!
☐ Please have your dealer phone me.
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ABOUT PEOPLE

American Meter Company has named Russell W. Wetjen vice president and general manager of its recently acquired subsidiary, the Granberg Corporation of Oakland, Calif., a prime manufacturer of tank truck, bulk plant and pipeline petroleum meters and pumps. Mr. Wetjen is also vice president and general manager of the Buffalo Meter Company at Buffalo, N. Y.

R. W. Wetjen

Dwight E. Lewis has been promoted to general superintendent of the **Chain Belt Co.'s** heavy machinery factory operations in Milwaukee. He will be responsible for factory production in four plants within the company's construction machinery, conveyor and process equipment divisions.

Hazen and Sawyer, Engineers, announce the removal of their offices to 360 Lexington Ave., New York 17, N. Y.

John Clarkson, Consulting Engineer, and **Clarkson Engineering Company Inc.,** New York 9, N. Y., announce the appointment of Dwight T. Myers, P. E., as director of marketing.

Arthur B. Horton was elected board chairman of **Chicago Bridge & Iron Company** at a recent meeting of the board members in Chicago. At an earlier meeting of the company's shareholders, John T. Horton was elected a director of the world-wide steel plate fabricating and construction firm.

Sika Chemical Corp., Passaic, N. J., has named John F. Esping to head its new district office at 2826 Main St., Kansas City, Mo., which will serve architects, engineers, contractors and the concrete construction industry in Missouri and Kansas.

Robert H. Lentzner, whose appointment as a district representative for the "Michigan" line of construction machinery was announced by A. E. York, sales manager of the Construction Machinery Division, **Clark Equipment Co.,** Benton Harbor, Mich., will serve "Michigan" distributors in Alabama, Arkansas, Louisiana, Mississippi and western Tennessee.

Directors of the **Recordak Corporation,** Eastman Kodak subsidiary in the microfilming field, have named James M. Arnold president and John K. Boeing chairman of the board. Mr. Arnold was also elected a director and will continue as general manager, a position he has held since 1957. Mr. Boeing was formerly president of Recordak and is one of the pioneers in the field of microfilming.

J. M. Arnold

Byron K. Hartman has been named executive vice president and general manager of **Syntron Co.,** Homer City, Pa., manufacturer of vibratory materials and electronic devices and equipment.

The Ludlow Valve Mfg. Co., Inc., Troy, N. Y., has named James La Porte to supervise its Kansas City, Mo. sales office. He succeeds Thomas McGinley.

Dorr-Oliver Inc., Stamford, Conn., has assigned Frederick G. Nelson to Tokyo, Japan as technical adviser to Sanki Engineering Co., Ltd., D-O manufacturing representative in that country. Mr. Nelson will assist and advise Sanki's newly organized Environmental Sanitation Department in application of the latest sanitary engineering practices.

A. C. Sachs, formerly staff engineer with the Crane Company, Chicago, Ill., has joined the **A. McDonald Mfg. Co.** in Dubuque, Ia., where he is serving as chief product engineer and quality control director, a newly created position.

Richard E. Miller has been named district manager of the Chicago District office of the Meter and Valve Division of **Rockwell Manufacturing Co.,** Pittsburgh 8, Pa.

Russell A. Hedden has been appointed works manager of manufacturing, Industries Group, at **Allis-Chalmers** West Allis (Wis.) Works. He succeeds E. W. Bonness, who has been named consultant to the director of manufacturing, Industries Group.

Theodore Van Zelst has been elected a vice president of **Cenco Instruments Corp.,** Chicago, Ill., and a director of Central Scientific Co., a Cenco subsidiary, according to an announcement by John T. Gossett, Cenco board chairman. Mr. Van Zelst is also president of Soiltest, Inc., which he started in 1946. It was acquired by Cenco in June 1959.

T. Van Zelst

R. C. Moulenbelt and V. W. Seifert, former executive engineers with A. M. Kinney, Inc. of Cincinnati, Ohio and New York, N. Y., have joined the firm of **W. I. Barrows & Associates,** Consulting Engineers, Dayton, Ohio. The firm, which was founded in 1932,

(Continued on page 202)

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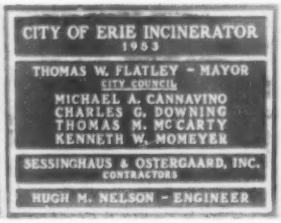
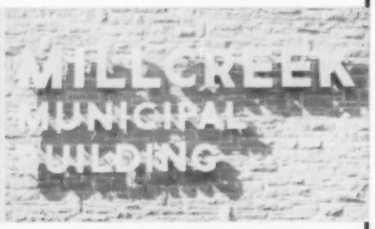


22 x 16 PLAQUE



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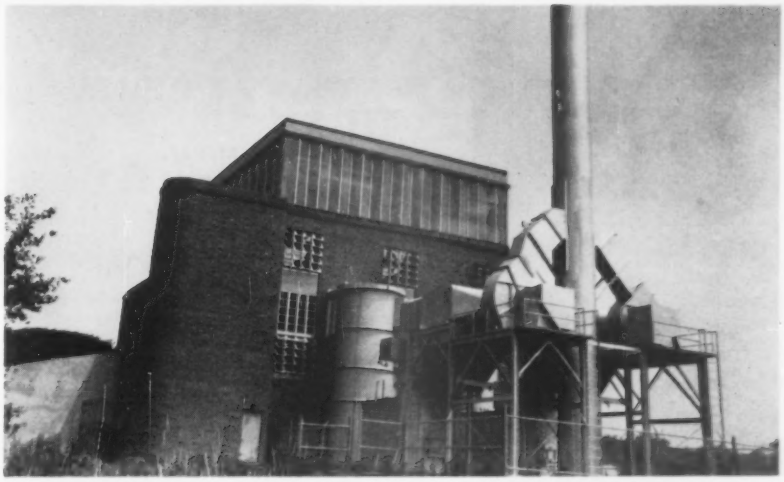
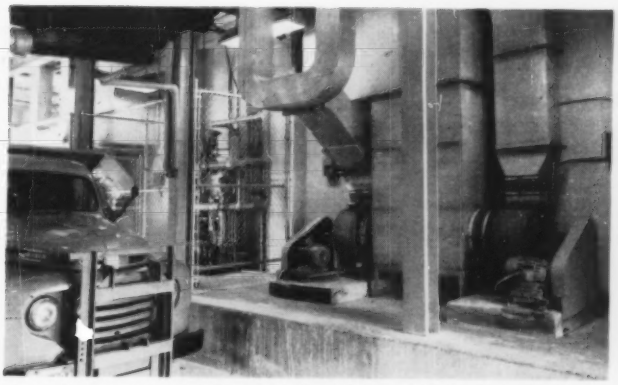
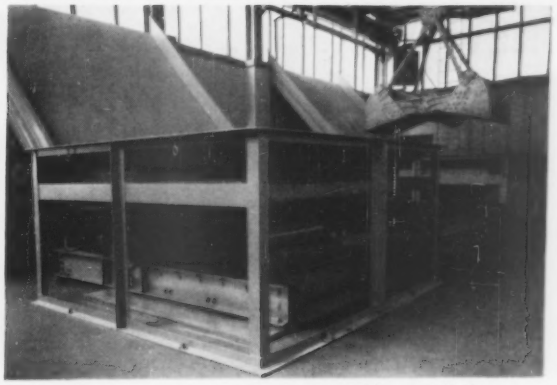


Rear View Showing Combustion Chamber, Spray Towers, Dust Collectors, Induced Draft Fans, Ductwork and Stack.



Fan and Duct Arrangements. Forced Draft Fan at Right. Cone Cooling Fan at Left.



View of Charging Hoppers, Hopper Splash Plates and Charging Gate.

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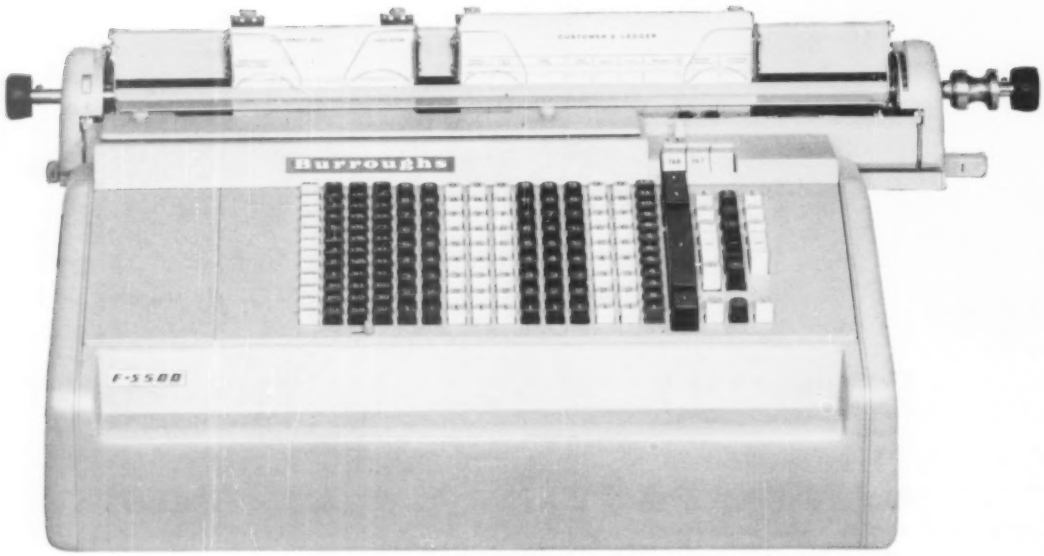

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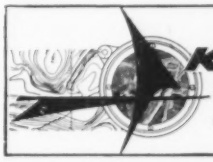
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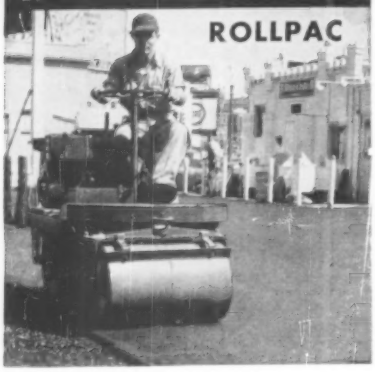

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That's why thousands of contractors, landscapers, institutions and others make Rollpac their "number one" unit. One week on *your* job will prove to you why Rollpac is the top selling one-ton roller in the United States.

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Easy to transport with Rolcor Trailer.

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About People

(Continued from page 188)

will provide an expanded engineering service in the design of municipal and industrial power plants and in the design of paper mills, water supply and waste disposal facilities.

Raoul D. Elder has been named division sales manager of Aurora Pump Division, **The New York Air Brake Co.** He succeeds John M. Bals, recently appointed general manager of the Division.

O-Cedar Division of **American-Marietta Co.**, Chicago 11, Ill., has appointed Jay H. Rodgers as national sales manager of the Industrial and Institutional Division. The company's Presstite Division has appointed Harry C. Shields, formerly manager of Sealing Compound Sales, manager of the Construction Sales Division.

Harry E. Kampf, formerly chief engineer in charge of water meters, has been named chief engineer of the Liquid Meter Division of **Neptune Meter Co.**, New York 20, N. Y., according to an announcement made by Wentworth Smith, general manager of the Division and Neptune vice president.

Minnesota Mining & Manufacturing Co., St. Paul, Minn. has appointed Joseph C. Duke to the newly created position of executive vice president for sales administration and public relations.

William R. Colton, named district manager St. Paul sales, for Griffin Pipe Division, **Griffin Wheel Co.**, Chicago, Ill., will serve Minnesota, northern Wisconsin and Upper Michigan.

Griffenhagen-Kroeger, Inc., a new firm in the John Diebold group of consulting firms, will specialize in public administration. It combines the consulting practices and services of Griffenhagen & Associates (for the past three years a division of John Diebold & Associates) and Louis J. Kroeger & Associates. John Diebold is president of the new concern and Louis J. Kroeger is executive vice president and general manager. Griffenhagen-Kroeger, Inc. will continue offices in San Francisco, New York, Los Angeles, Chicago, Philadelphia and Washington, D. C.

James L. Richardson is now advertising and sales promotion manager of **General Electric's** Distribution Transformer Department, Pittsfield, Mass.

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Advertisements in this section will be accepted at the rate of $15 per column inch (minimum 2 inches).

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The largest manufacturer of traffic control marking equipment has several territories open due to a change in distribution methods. Products are sold to municipalities, industrial plants and contractors. Experience selling this field desirable. Include territory covered, method of operation and experience in your application. Write to Box 120, The American City, 470 Park Avenue South, New York 16, N. Y.

Water Superintendent

Westminster (Pop. 24,000) Starting salary open, range $540 to $645. Minimum H. S. Diploma and 2 yrs. College, with two years responsible position in Municipal or Private Water Company. Responsible for administration and operation of newly created Water Department. Applications available from City Administrator, City Hall, Westminster, Calif. Deadline: January 17th, 1960.

For Sale
Portable Basketball Floor

Over-all size 68′ by 96′ built in sections 4′ by 8′, hard maple floor with clear finish in excellent condition, has dirt sills, manufactured by DiNatale and has been used only during basketball season since 1949. Will sell f.o.b. Golden, Colorado for less than one-half of its original price. For further information contact Business Manager, Colorado School of Mines, Golden, Colorado.

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Special report to owners of Traxcavators, D6 and D4 Tractors

CAT CATERPILLAR

Parts you can trust
Dependable round-the-clock service

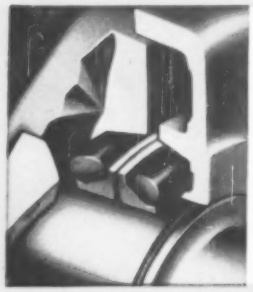
Now available...lifetime lubricated rollers...two-way savings...

ELIMINATE MAINTENANCE GIVE LONGER LIFE

Here's another cost-cutting improvement for Traxcavators and both D6 and D4 Tractors . . . lifetime lubricated rollers. Now you can eliminate on-the-job shutdowns for greasing. And you get longer life from rims, flanges, internal parts. The payoff . . . reduced replacement costs, savings in time.

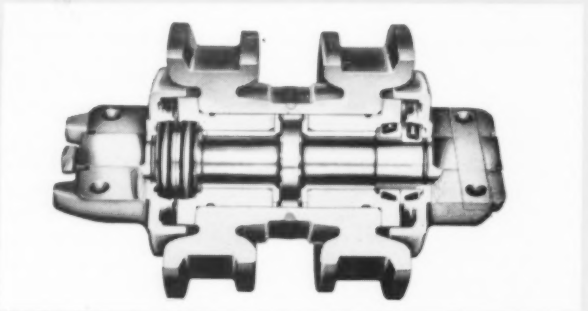
How maintenance is eliminated—the new Cat-built rollers are lubricated when first installed. They are equipped with floating ring seals that keep lubricant in . . . grit out . . . for the life of the rollers. Only when rollers are disassembled for rebuilding will relubrication be necessary. And the original metal rings can be reused.

New floating ring seal . . . only four parts, no springs. The roller seal employs two alloy metal rings and two rubber "O" rings. The metal rings, much harder than the best file steel, have lapped faces, smoother than glass. These faces taper slightly toward the inner edge forming a sealing area at the outer edge. As wear occurs, the sealing area moves gradually inward, maintaining a perfect seal for thousands of hours.



The "O" rings keep constant pressure on the metal rings. Lubricant can't get out. Grit can't get in. There are no springs or diaphragms to weaken, wear or become damaged. The "O" rings are made of special compound to resist oil, heat, cold.

Why do roller parts last longer? Grit is permanently sealed out. Big lubricant reservoirs (with strategically located oil passages) insure ample supply of lubricant to moving parts. Oil instead of grease is used for roller lubricant. Oil dissipates heat faster, circulates more freely than grease. These features assure you of longer shaft and bearing life. Longer bushings with extra-thick flange assures rigid support. Large sleeve bearings provide ample bearing area. Larger diameter, deep-hardened shafts withstand higher shock loads. Beam strength has been increased 63% for D6 shafts; 185% for D4 shafts. Resistance to side thrust is



greatly increased in D4 shafts by a 25% wider center flange and 73% more thrust-bearing area.

Why do rims and flanges last longer? The new two-piece roller shell has greater strength and impact resistance. Special heat-treat process provides extra-hard and deep wear surfaces. Ample steel under tread gives strong support to resist shock loads. Thicker flanges combat peening over. Overlapping center joint maintains rigid shell without separate hub.

Easy installation is achieved by use of snap rings to hold the seals and end collars in place before mounting. End collar bolt holes will line up easily with track roller frame holes during installation.

Millions of hours of proof—the toughest track rollers yet. Cat lifetime lubricated rollers have been subjected to extensive and exhaustive on-the-job tests for over 5 years. Working on all types of job conditions, these time-tested rollers have proved to be unequaled. And machine-owner reports prove that Cat lifetime lubricated rollers can't be beaten for low-cost, minimum maintenance operation.

See your Caterpillar Dealer. He'll give you the full story on this time-saving, money-saving undercarriage component.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

SERVICE TIP: When rebuild time finally comes, be sure to keep the metal rings matched in original pairs, being careful not to nick or mar the lapped surfaces.

CATERPILLAR

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Why this "magnetic" meter has no troublesome stuffing box

With Rockwell Sealed Register meters you will never again need to service worn or leaky stuffing boxes—for there are none: A simple, powerful magnetic coupling transmits every motion of the measuring chamber direct to the register without a mechanical coupling or seal.

Stuffing box maintenance is only one way you'll save with these revolutionary meters. You'll gain substantially through a construction in which only two moving parts operate in water—all others run snug, dry and lubricated for life in a hermetically sealed register housing.

Too, the sealed register construction assures that condensation or dirt can never collect underneath the glass to make meter reading difficult. And you can even run this meter under water without harm.

The cost for all this? No more than you pay for ordinary meters—less in fact than for meters fitted with special type registers. Get facts today, write Rockwell Manufacturing Company, Pittsburgh 8, Pa.

POWERFUL MAGNETIC DRIVE

Illustrating how the driver magnet (held in hand) revolves around a watertight compartment at base of register to push the follower magnet, which in turn drives the register shaft.

SEALED REGISTER METERS

another fine product by

ROCKWELL

$7.50/hour operates 2 Michigans

Cost averages 20,000 hours, hundreds of different jobs, including plowing, loading of record snow

It all started January 16. Temperatures dropped to near zero. The wind whipped up. Snow began to fall. By dusk, the blizzard had dumped 17 inches on the ground, level measure. Drifts were 6 and 8 ft deep—and growing. Traffic was halted throughout the city—South Bend, Indiana.

Yet, this was only the beginning. By the end of the month, *45.1 inches had been measured.* It was the heaviest snow month, *by 10 inches*, in the 65 year records of the U.S. Weather Bureau in South Bend! A terrific workout was given the City's entire equipment fleet.

Work 18 straight 24-hour days

Among this fleet were two veteran four-wheel-drive Model 75A Michigan Tractor Shovels. These units worked continuously, 24 hours a day, for 18 straight days. They helped clear intersections. They plowed snow too deep for graders and truck plows. They loaded windrows in the downtown area. Their speed and versatility helped the City Street Department post an enviable record—despite high winds, subzero temperatures, and the deep drifts, not a missed garbage collection, milk delivery, or stuck emergency vehicle.

No repairs needed

"Our Michigans did a fine job!" says Dan Richardson, City Street Commissioner. "In the 18 days of continuous work, they stopped only for refueling and changing operators—yet, despite the long hours of work and exposure to moisture, cold and wind, we didn't have to do a thing repair-wise."

Cost includes wages, maintenance depreciation

Operating costs, overall, have also been exceptionally low. The City of South Bend has had the two Michigans for years—one almost six years; the other, almost four. In 20,000 work hours, total, they have had virtually no downtime. Major repairs, for instance, have cost only $1,500—*$2.88 per machine per week!* Tires on the newer machine are original . . . the City sets aside $5 per machine per week for replacement. Other costs, according to department records, have averaged only $3.55 per hour—*including* wages ($1.85), fuel, oil, maintenance, depreciation ($1.00 per hour), and insurance.

Jobs done? Literally hundreds of different kinds. Snow removal. Street rebuilding. Truck-loading of stockpiled gravel, fill dirt, cinders, and salt (5 yd trucks in 2 minutes). Back-filling. Street cleanup. Retrieving jammed sewer buckets. Extinguishing landfill fires. Loading broken concrete.

"No matter *what* the assignment," says Commissioner Richardson, "our experience has proved you can depend on a Michigan Tractor Shovel to get there fast, do the work fast, and without trouble!"

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Construction Machinery Division

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